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Volume 53 Number 1

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Report of 61st Annual Meeting

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Glucose and Prednisolone Treatment for Ketosis

Intravenous Urography Studies in the Dog

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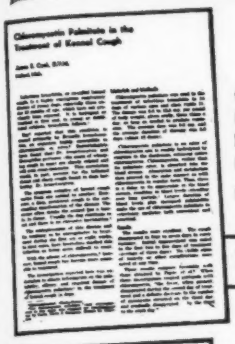

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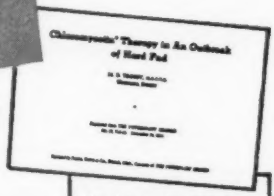

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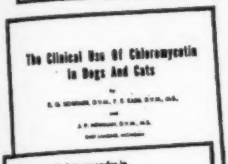

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by R. G. Schirmer, D.V.M., F. E. Eads, D.V.M., M.S., and J. P. Newman, D.V.M., M.S.

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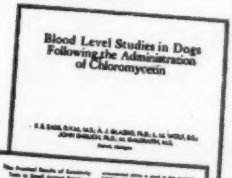

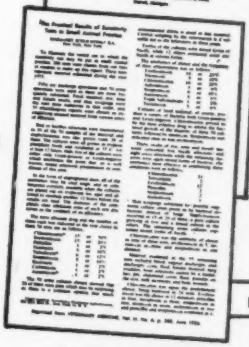

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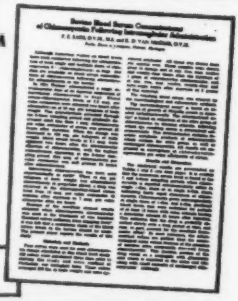

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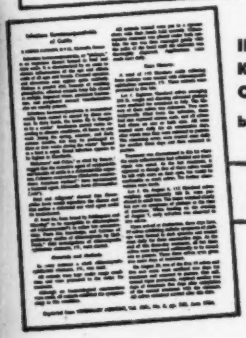

INFECTIOUS KERATOCONJUNCTIVITIS OF CATTLE

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Alfred H. Braumhover

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PARENTERAL ENZYME THERAPY
H. L. Easterbrooks, D.V.M., M.S.

The author reports original research on the mode of action and indications for enzyme therapy. Attention is given work in perfecting a useful therapeutic agent.

PRINCIPLES OF DERMATOLOGIC THERAPY
Frank Kral, D.V.M.

An illustrated article outlining specific recommendations for some common skin diseases of pet animals.

NATURE OF POISONOUS SNAKEBITES: EPIDEMIOLOGY, DIAGNOSIS AND TREATMENT
Henry M. Parrish, M.D., M.P.H.

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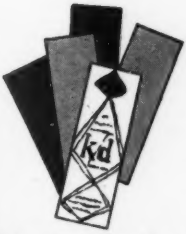

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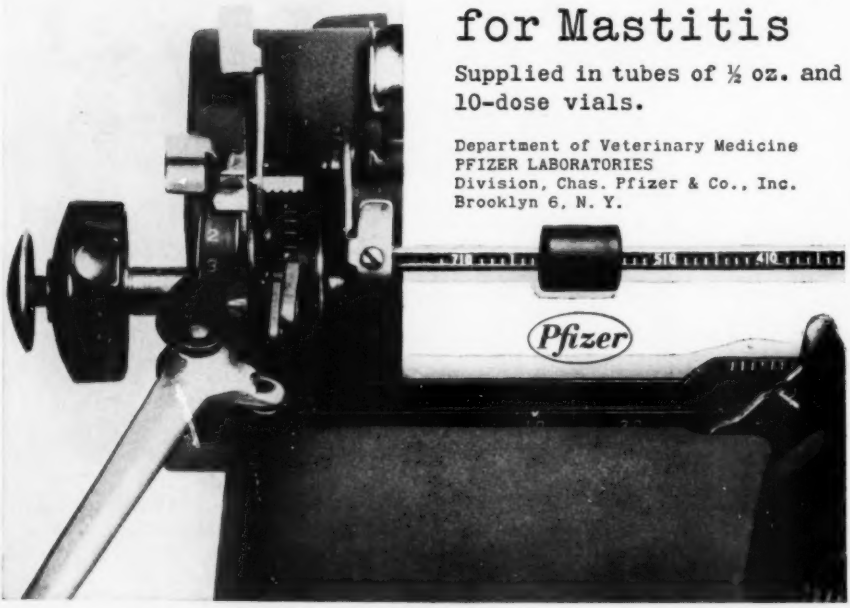

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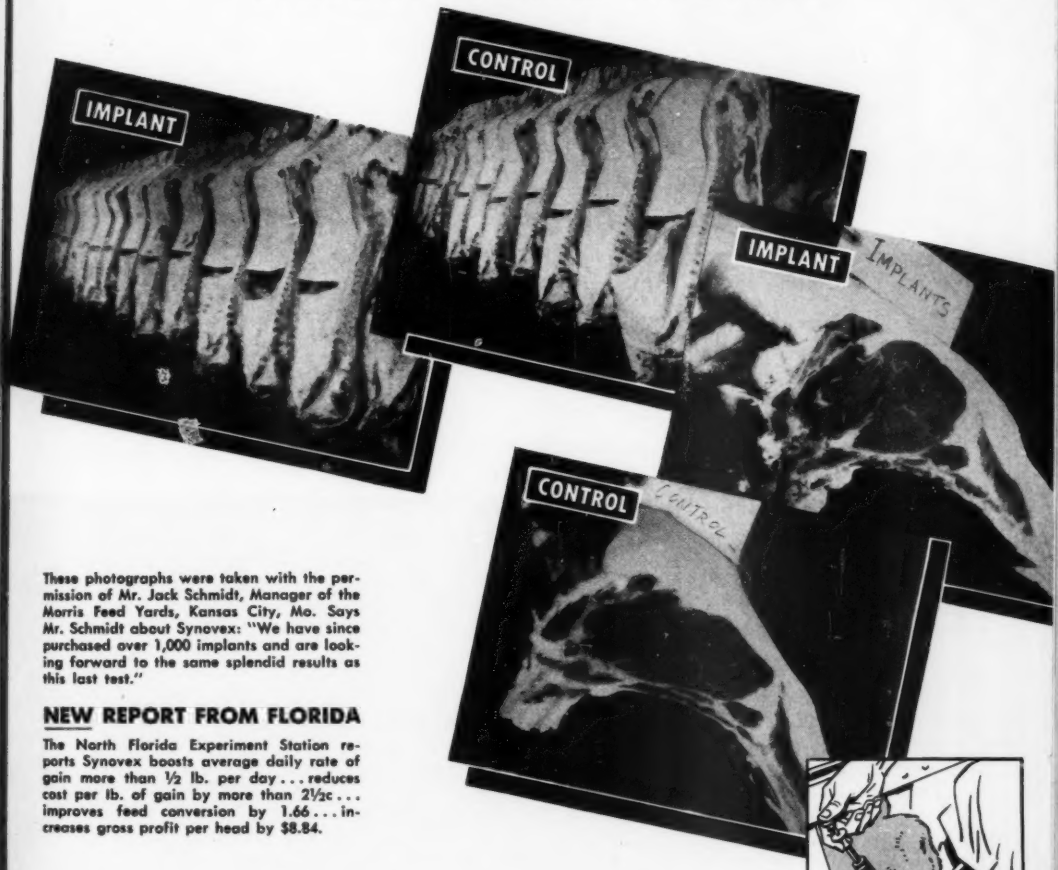

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News Comment

Immunity to Parasites

Research into induced host immunity to helminthic parasites has been stimulated recently by work in Australia and elsewhere.

Development of acquired immunity to ascarids, long observed by small animal clinicans, has been confirmed by demonstration of antiascaris antibodies in the serum of rabbits, guinea pigs and swine.

Immunity to certain nematodes has been achieved. Immunity develops only in the presence of metabolic products from the living worm, not from killed suspensions, or presence of dead worms in any form.

Mechanism of action is referred to as anti-enzymatic.

Humane Slaughter

Legislation for humane slaughter of food animals was favorably reported out of committee by the House Agricultural group.

The measure prohibits government purchases of meat from packers who do not employ humane slaughter methods in all of their plants. Although termed a moderate approach, it is difficult to imagine a more powerful instrument than economic consequences.

Pork Products for Export

Considerable space has been given recently in the public and farm press concerning export of pork products. Great Britain has expressed willingness to purchase pork products from those states in which vesicular exanthema does not exist, and which have taken necessary steps to ban the use of virulent hog cholera virus.

This action will undoubtedly have a favorable influence on the economy of those states that have already achieved the required status. It should stimulate others, regard-

less of quantities of products moved in export trade.

Positive Swine Disease Control

Current research being conducted by Dr. George A. Young, University of Nebraska, Lincoln, suggests a new technic for provision of disease free replacement stock for swine growers.

Disease free pigs are obtained by hysterectomy from selected sows and pigs transferred to special brooders where they are kept for one week. Afterward pigs are grouped into increasingly larger droves at designated intervals. New or clean quarters are provided when transferred to farms. Gilts are bred by boars raised in the same fashion. Farrowing is normal for special reared gilts.

Tranquilizers for Stress

Trials with tranquilizers to reduce the stress syndrome induced by various factors associated with movement, change, and handling of feeder cattle suggest that these agents may be valuable adjuncts in reducing incidence of respiratory disease (shipping fever) in calves.

Frozen Semen

Breeding up to 100,000 cows to one sire within a year is a physical possibility, according to Breed Association manager, J. M. McLean.

Perfection of dilution and storage (freezing) technics have made this phenomenal feat possible. It emphasizes the enormous responsibility of proper selection of sires.

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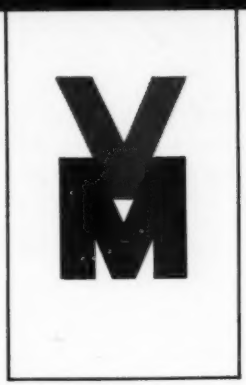


Special Report

U. S. LIVESTOCK SANITARY ASSOCIATION

61st Annual Meeting
Saint Louis, Missouri

HAD A VISITOR at the sessions of the 61st annual meeting of the U. S. Livestock Sanitary Association not attended conventions during recent years, he might have been amazed and perhaps bewildered at the increased scope of this Association's activities. Federal, state and territory livestock disease control officials, who make up the official family of U.S.L.S.A. must not only cope with the changing scope of animal diseases, but with intricate ramifications that have public health significance as well.

Foundation of An Association

On September 27-28, 1897, the operators of the Ft. Worth Stock Yards invited state veterinarians of the northern states to come to Texas and observe a then new method reputed to free cattle from disease bearing ticks. Out of this meeting with but a singular purpose has evolved an Association devoted to control of many diseases of domestic livestock, some transmissible to man. This reporter dares venture that had it not been for the cooperative efforts of the official members of the U.S.L.S.A. the American livestock industry could not have grown to the proportions that it has attained. American consumers owe a debt to disease control officials who have shared in assuring an abundant supply of wholesome animal protein foods.

From 1897 to 1909 officials having responsibilities concerning animal health met as The Interstate Livestock Boards and State Veterinarians. Those early day officials were essentially representatives of the livestock growers and dealers. Today they continue to function in the same role with an added responsibility to the entire citizenry of their respective states.

In 1909 the name was changed to The U. S. Livestock Sanitary Association. The name perhaps fails to convey the scope of its present activities, and for this reason the Association was presented with a resolution to change the name to American Association of Livestock Disease Regulatory Officials. The resolution is now under consideration by the Executive Board.

Although the etymology of the term sanitary (*sanitas*) pertains to health, common usage implies cleanliness and does not adequately cover the scope of duties of the present day disease control official. Matters of prophylaxis, for example, go beyond the application of what is ordinarily implied as a sanitary measure. Likewise, field or laboratory tests for insidious disease, work

Dr. John C. Milligan, Alabama State Veterinarian, Montgomery, President of the U. S. Livestock Sanitary Association.

which frequently comes under the supervision of state veterinarians, is more than sanitation in the modern sense. The Association is strong and is continually being strengthened by cooperative efforts. One of these is uniformity of state regulations, long recognized as a goal of accomplishment. Deliberations are serious in all meetings, which makes repetition of the statement applied to previous meeting a meaningful appraisal—At no other meeting is so much offered of such value in so short a time.

President's Address

President Dr. G. H. Good, state veterinarian of Wyoming, referred to the matter of uniform regulations and the local complications that prevent acceptance of a recognized ideal. He pointed out extreme variations in types of livestock operations in Wyoming and New Jersey to emphasize the problems. He proposed that the problem be broken down for ease of handling and that uniform regional regulations be an intermediate goal. Such subdivisions of the continent would aid materially in the movement of stock within regions under uniform regulations. This appears to this reporter as realistic and would certainly prove a step forward toward elimination of some present confusion.

He also proposed that regulations be published in such form that portions might be altered without dating an entire published code. A loose-leaf system might serve so that changes, additions, et cetera, to a certain group of approved regulations may supplant those previously published. Ease of maintaining files would aid in the informed enforcement of state requirements.

Tuberculosis Eradication

Doctor Good referred his listeners to a situation of considerable concern in some states regarding bovine tuberculosis. He expressed the point that the present sampling technics to reveal incidence are inadequate. A renewed effort must be made to reveal the infected animal, which is actually the original purpose of area testing. That the present program is failing is evident in the fact that some states now refuse to accept cows from modified accredited tuberculosis free areas without the added guarantee of immediate negative tuberculin test. He noted that within a five-year period almost all cattle come under the observation of a killing floor inspector, and that infected herds might be traced from that angle. Three factors, of course, limit the possibility of complete effectiveness: (1) All animals are not slaughtered under adequate postmortem inspection, (2) no lesion reactors are not uncommon, and (3) mere identification of lesion cases is insufficient. Source of infected carcasses must be revealed and the possible spread in the source herd determined.

During 1957, there were 8,976,409 head of cattle tuberculin tested, of which 13,974 were reactors. Approximate cost of locating one infected animal was $490. Source herd testing as revealed by inspection at slaughter is certain to reduce this terrific cost. New York reports an approximate cost to identify reactors at $32.25 per head.

Hog Cholera

Modified and inactivated hog cholera vaccines have now had sufficient field test and time to demonstrate their value. These agents can adequately replace the use of virulent live virus. If unattenuated virus were outlawed completely, swine would not be without an effective disease barrier in the new products which are gaining wider acceptance each year.

Maintenance of inspection to assure proper garbage cooking and elimination of virulent virus will remove from the swine scene the greatest threats to the industry and to profits of swine producers. Only one other important source, the infected herd, would remain to be dealt with if garbage cooking laws and regulations were universal and adequate, and the manufacture and distribution of simultaneous virus prohibited.

Dr. R. A. Hendershott, Trenton, New Jersey, Secretary-Treasurer of the U.S. Livestock Sanitary Association.

Resolutions

Among resolutions proposed was that pertaining to brucellosis eradication. In this was pointed out notable progress in virtual elimination of a disease of cattle communicable to man. The resolution urged continued financial support of the plan now functioning so that all possible advantage may be taken of gains thus far made in practical eradication.

Election of Officers

Officers elected to serve the Association for the coming year included the following: President Dr. John C. Milligan, Montgomery, Alabama, and Mr. Francis G. Buzzell, Augusta, Maine; Dr. James R. Hays, Columbus, Ohio; and Dr. A. P. Schneider, Boise, Idaho, first, second, and third vice presidents respectively. Dr. Ralph A. Hendershott, Trenton, New Jersey was reemployed by the Executive Board as executive secretary.

The meeting for 1958 will be held at Miami Beach, Florida. Headquarters hotel tentatively scheduled is the Deauville. Date of session to be announced later.

Proceedings Book

Each year a Proceedings Book is published containing in detail all papers presented, committee reports, and discussions together with group actions taken. This book is distributed only to members, official and individual. Individual membership is open to veterinarians who are also urged to take part in discussions. The annual official proceedings complete, comprehensive, carefully edited, printed and bound are easily worth the membership fee of $5. annually. Those interested are urged to write Dr. Ralph A. Hendershott, 33 Oak Lane, Trenton 8, New Jersey.

·VM·

Connecticut is the eighth state to become modified-certified brucelosis-free.

PANEL DISCUSSION . . .

M. G. Fincher, D.V.M.
Moderator

On Mastitis

Dr. M. G. Fincher, Professor of Veterinary Medicine, and head of the Department of Medicine and Obstetrics, director of Ambulatory Clinic and the New York State Mastitis Control Programs, New York State Veterinary College at Cornell, Ithaca, New York, was moderator of this panel.

In introducting the subject, Doctor Fincher pointed out that though there are many facts about bovine mastitis, yet to be revealed, a few points were established upon which there is at least some semblance of general agreement. These were mentioned as follows:

1. Mastitis is a complex disease having many known and unknown causes.

2. *Streptococcus agalatiae* infection is an important, if not the most important disease agent.

3. Acute, severe clinical cases are due to infectious agents other than *Strep. agalactiae.*

4. Trauma, including that resulting from improper application of the milking machines is an important cause.

5. Physical character of the udder appears to influence incidence. Pendulous udders are more susceptible than compact udders to injury and thus to mastitis. Genetics possibilities deserve study including beside the desirable udder type, structure of teats, particularly teat ends.

6. Testing and treatment under supervision of experienced veterinarian reduces losses from mastitis, whereas blind treatment leaves much to be desired.

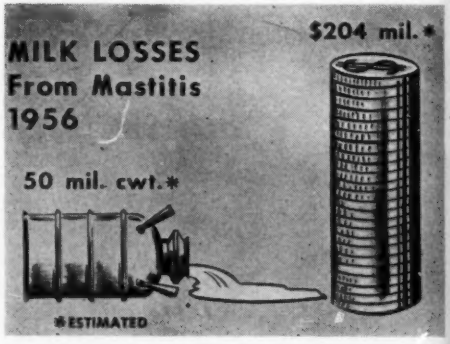
7. Treatment of individual infected animals alone will not solve herd disease problems.

8. Owner conscientious of those preventive measures experience has proved useful in reducing incidence of disease.

Summaries of discussions of panel members follow.

ECONOMIC IMPORTANCE OF MASTITIS

Notes from paper presented by C. D. Van Houweling, D.V.M. *Assistant Administrator, Agricultural Research Service, USDA, Washington, D. C.*



A rapidly increasing population in the United States and a growing awareness of human nutritional needs is expected to increase the demand for fluid milk. If per capita consumption increases as anticipated by only ten pounds annually, dairymen will be required to produce 157,000,000,000 lb. of milk to meet the present projected population demands in 1975.

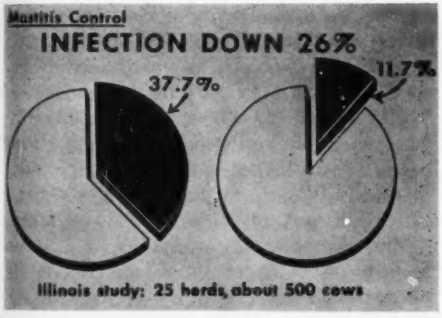
Steadily increased production of milk has occurred as knowledge concerning breeding, management, livestock nutrition, and control of diseases and parasites has advanced. In 1956, production set a new record of over 6,000 lb. per cow. Dairymen are rather in agreement that this record can be bested,

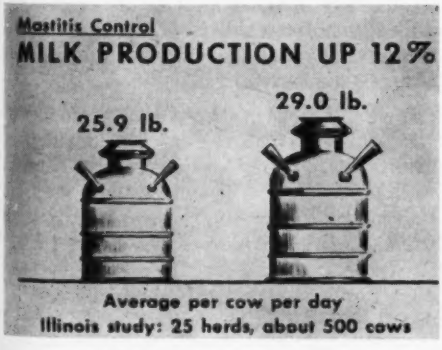
perhaps by another 100 lb. annually for the next several years. This would, indeed, give encouragement toward meeting probable needs during the coming years.

Balanced against these facts and anticipated demand is the records of declining dairy cattle population. If future generations are to be supplied with nutritious fluid milk the trend must be reversed even with increased per cow production.

Mastitis a Major Disease

Mastitis is responsible for greater milk losses than all other disease and parasites of dairy cattle combined. Translated into quantity of fluid milk, mastitis causes a loss of 5,000,000,000 lb. annually. More than 6,000,000 persons might be provided with a quart of milk every day of the year if all such loss could be eliminated. This is not the total loss attributed to the ravages of the disease. Considering mortality, reduced valuation, cost of replacements, poor quality milk, treatment and drug cost, and labor loss cost the estimated cost of mastitis infection in the United States totals over $250,000,000. per year; an appalling figure that should stimulate the best disease control efforts that can be mustered.





Much of this loss is preventable by approved herd management practices, accurate and early diagnosis, and properly applied treatment. Studies conducted at various experiment stations and in the field have demonstrated that incidence of the disease could be reduced drastically. Milk production invariably increases in herds as disease incidence is controlled. Many instances of better profits from operations may be sighted where well-conceived programs of mastitis control have been instituted in trouble herds.

POSSIBLE ROLE OF NUTRITION IN MASTITIS

Notes of paper presented by W. D. Pounden, D.V.M., *Ohio Agricultural Experiment Station, Wooster Ohio.*

Research workers and dairymen have endeavored to correlate various feeding practices with incidence of mastitis for years. To date, findings and observations have not confirmed any relationship of significance, which is to say, that no theories concerning influence of either concentrates or pasture on mastitis have been confirmed or have proved that generally employed and economical feeding practices were taboo.

Reports on the effects of feeding on mastitis generally concern various concentrates, more particularly their overfeeding. Inconsistencies in experimental results of a number of investigators have been the rule. Sometimes higher levels of grain feeding or special components appeared to stimulate mastitis attacks and at other times the opposite was true.

Roughage components have also come under scrutiny. In the herd study by Dr. J. M. Murphy (Proc. 51, Ann. Mtg., U. S. Livestock Sanitary Assn., 1947) extensive outbreaks of mastitis in the summer pasture season were reported.

Pasture was most plentiful during the years when attacks were most severe. Similar conclusion has been drawn from studies in the Midwest and California. Inconsisten-

cies in manifestations of udder disease point to lack of understanding the reasons for outbreaks. In some herds, a possible correlation with an improper feeding program have been recognized.

The matter pertaining to periods of reduced resistance suggested the examination of milk since this is the environment in which bacteria, ordinarily associated with the disease, are most active. Suitability of milk as cultural media, or its capacity to resist acid production has provided a base of measurement. Though this indirect methods may not prove animal resistance, it does point out seasonal variations in the milk for sustaining bacterial growth. From these studies some indication is apparent that feed at times influenced the relationship of milk and mastitic infections. All factors, however, were not constant in these studies. Usual trends suggested loss of resistance levels during lush pasture seasons.

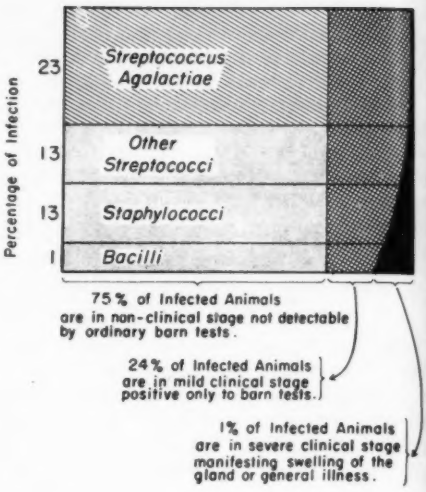
INVADING ORGANISMS AND THE HOST IN BOVINE MASTITIS

Abstract of paper presented by James W. Murphy, V.M.D., *New York State Veterinary College, Ithaca, New York*

In spite of claims made regarding the susceptibility of organisms commonly involved in bovine mastitis to various antibiotics, it is becoming increasingly evident that no agent can be expected to give satisfactory results without consideration of many factors that may influence its action. It is irrational, to say the least, at this stage of our understanding, to place sole reliance on a group of therapeutic agents to accomplish disease control. This is particularly true in bovine mastitis. Considering reported incidence of this disease in dairy cattle and losses directly attributed to its ravages, the present rather awkward position must be revised regarding the proper application of mastitis therapy.

Etiology of bovine mastitis has been complicated during recent years as increasing numbers of agents have been suspected as causative. For practical purposes there

FIGURE 1


Percentage of Infection
23
Streptococcus Agalactiae
13
Other Streptococci
13
Staphylococci
1
Bacilli
75% of Infected Animals are in non-clinical stage not detectable by ordinary barn tests.
24% of Infected Animals are in mild clinical stage positive only to barn tests.
1% of Infected Animals are in severe clinical stage manifesting swelling of the gland or general illness.

really is no need for considering more than four main forms of this disease. (See fig. 1.)

Causes of these are (1) *Streptococcus agalactiae,* (2) other streptococci, (3) staphylococci, and (4) bacilli. At least 99% of mastitis will fall into one of these catagories. Based on figures accumulated over the years in New York, 50% of the cows are not infected with any pathogenic bacteria, 23% are infected with *Strep. agalactiae,* 13% with other streptococci, 13% with pathogenic staphylococci, and 1% with bacilli. It will be noted from the chart (fig. 1.) that most infections are in the nonclinical stage at any one time. These are classified as normal with ordinarily employed barn tests. Concurrently approximately 24% of those infected may, by careful application of diagnostic tests, be classified clinically as infected. Only 1% are severe clinical cases having acute swelling of the udder or are generally ill.

It should be pointed out that each of the three stages may exist of all four types simultaneously. Thus a quiescent stage may result after clinical manifestations and be followed by a "flare-up." Also noted is that *Strep. agalactiae* rarely cause severe clinical disease, whereas agents responsible for other forms tend toward acute clinical illness.

Mastitis Control Programs

Formal mastitis control programs have been organized as state-wide efforts in only two states; New York and Connecticut. In New York the concept of conscientious application of nonspecific measures as expressed by Udall has provided a basis for reducing incidence of all types. In Connecticut, testing and treating have been applied toward eliminating the primary responsible organism, *Strep. agalactiae*. Both have virtue and both limitations. The veterinarian too often is not consulted until clinical mastitis is obvious. Treatment or disposal of these cases can not be expected to control the disease as a herd problem. Rather it becomes increasingly more important that measures be employed during nonclinical infection stages.

Host-Parasite Relationship

Study of the age and genetic factors related to mastitis suggest that host resistance was of major importance. English workers also demonstrated that young and previously noninfected cows resisted artificial exposure whereas older and previously infected individuals succumbed.

Route of Infection

Attempts to correlate physical characteristics of the teat to susceptibility and resistance have been fruitless. The easy milker is apparently no more susceptible to mastitis than the hard milker. Furthermore, efforts to establish infection by application of virulent culture at or within the teat orifice have been generally unsuccessful. The hypothesis of "back-suction" has been largely disproved. At the present it is impossible to state how udder infection occurs. It appears, then, that more basic information on this point and others is essential before effective procedures can be brought into practice. Fundamental studies must be pursued by a number of qualified, well-staffed groups. These to be given the necessary encouragement to assure development of new information needed.

MECHANICAL MILKING AND MASTITIS

Abstract of a paper presented by O. W. Schalm, D.V.M., Ph.D., D. O. Noorlander, B.S., *and* A. C. Pier, D.V.M., *School of Veterinary Medicine, University of California, Davis.*

Dairymen in general have been convinced by undeniable evidence that prolonged application of the machine to the udder, and improper vacuum levels directly influence the incidence of mastitis. Despite more care and attention to these points, the milking machine continues to contribute significantly toward the cause of most important dis-

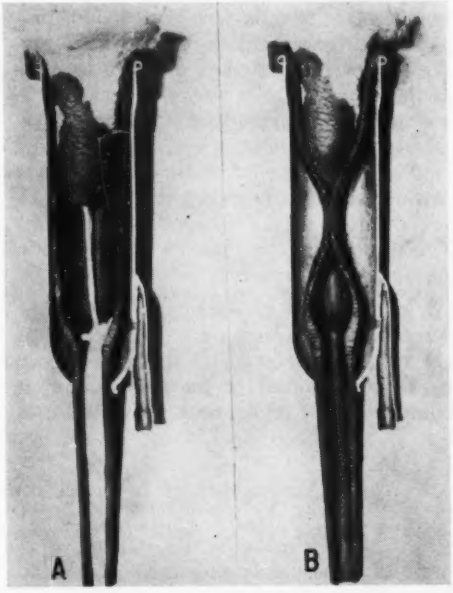


Fig. 1. Model of milking machine teat cup in action: A—milking phase; B—Massaging phase.

ease of dairy cows. Mastitis control programs, no matter how well conceived, may fail miserably unless abuses to the udder by mechanical milking (now of such common occurrence) are understood, and that measures are taken to prevent such abuses.

These concepts are not entirely new since careful research conducted 20 years ago developed that milking machines were potentially injurious unless properly handled.

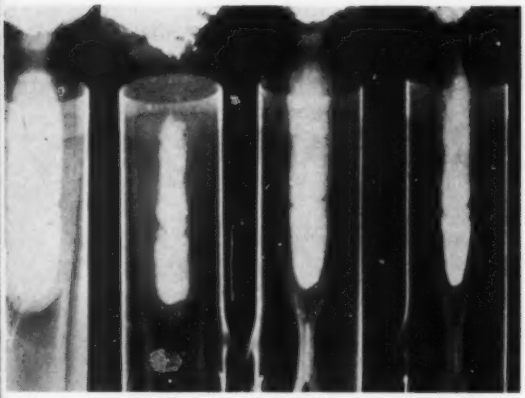


Fig. 2. *X*-ray of teat cup in action. Milk fills the teat cavity and buffers the impact of the collapsing rubber liner (a and b); end-point or machine milking when teat shrinks and pressure of collapsing liner on the tissues increases (a' and b'). Note greater compression of tip of teat in b' than in b.

Researchers demonstrated that changes in the character of milk were, in general, proportional to the amount of vacuum employed and the period it was left working on the udder. There was also, increase in mastitis and decreased milk yields. Without doubt, better milking machines are being handled by better informed dairymen, yet considering the still wide incidence of mastitis the problem as concerns the machine is more complex than simple milking duration and vacuum levels.

Many matters of convenience, cleaning, et cetera have influenced design of present day machines. Not all of these have been in the best interest of the cow insofar as maintenance of udder health is concerned.

Consequences of Vacuum

A vacuum is not a force. It intensifies forces of atmospheric pressure. In a milking machine operating at 15 in. of vacuum (one-half atmospheric pressure), a differential pressure of over 7 lb. per square inch is applied suddenly to the rubber teat cup liner. Amount of this pressure exerted in the teat is conditioned on the resilience of the rubber liner and the tension on it. Exposure of the teat to constant vacuum cause a ballooning, so that teat surfaces are pressed tightly against the wall of the liner. In large bore, slack teat cup liners, excessive ballooning may occur depending not alone on the size of the teat, but the magnitude of milk let down, pressure inside the teat, level of vacuum, and resiliency of the liner, and the degree of tension as fitted. Narrow liners obviously limit ballooning. Experience has demonstrated that it is not necessary to balloon the teat excessively in order to accomplish rapid milking and thus use of large, slack liners are questioned; especially when employed under relatively high vacuum levels.

Tissue Changes

Other matters including crawling of teat cups, pressure on the teat, shrinking of the teat, and friction favor the narrow bore, stretched liner for milking machine. Radiograms during the milking process have made possible conclusions because of actual visualization of tissue changes during the milking process.

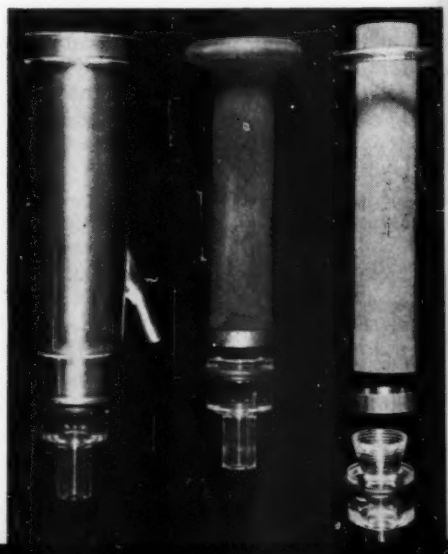


Fig. 3. Demonstration of the construction of a narrow-bore, stretched liner with plastic attachment for obtaining visual milking at the level of each teat cup.

Milking Machine Vacuum Level

Speed with which milk is removed from the teat is directly proportional to vacuum level. The higher the vacuum the greater the pressure applied to the teat by the collapsing liner. Level of 15 in. of vacuum is required for efficient milking by narrow bore, stretched liners. Less should be employed to minimize early and excessive crawling of large bore liners.

Constant attention to vacuum level is necessary for proper milking procedure.

Recommendations

1. Narrow bore, stretched liner are recommended on all conventional milking machines operated at 15 in. of vacuum.
2. Discard liners that have loss resilience.
3. Provide an air admission hole in the claw to prevent surging of milk in the claw and teat cups from the milk hose.
4. Design teat cups to provide visual milking.
5. Interrupt flow of constant vacuum to teats and simultaneously stop action of pulsator on the liner before removing milking machine.

STATISTICAL SUMMARY ON ANTHRAX LOSSES

Final returns have been computed to establish accurately morbidity and mortality due to the anthrax outbreak during late summer in Oklahoma and Kansas. There have been no reported losses since September 14 to October 29, 1957, date of summary prepared by the USDA.

A total of 457 herds were affected in eight counties in Oklahoma and 284 in four adjacent counties in southeastern Kansas. Estimated deaths reached 957 in Oklahoma and 670 in Kansas for a total of 1,627. Of these, 1,503 were cattle, 15 horses and mules, 39 sheep, 68 hogs, and two other species. Susceptible livestock were vaccinated in over 4,000 herds in both states. A total of 165,929 cattle, 3,412 horses and mules, 15,149 sheep, 13,759 swine, and 4,921 other species were given prophylactic vaccine beginning promptly following confirmed diagnosis.

Cutaneous Anthrax

Two cases of cutaneous anthrax were reported from this area during the outbreak; one in a practitioner who became infected handling diseased tissue of an animal dead of the disease.

The disease picture was complicated by blackleg, malignant edema, leptospirosis, and anaplasmosis, all prevalent in the area involved. Regulatory officials reported deaths only in those cases in which irrevocable evidence suggested anthrax. There was no reliable way to determine anthrax in treated animals that recovered; therefore these were not included in totals.

•VM•

Range and pasture conditions in 17 western states during the past two months are in better condition for the season than any time since 1942, according to USDA report.

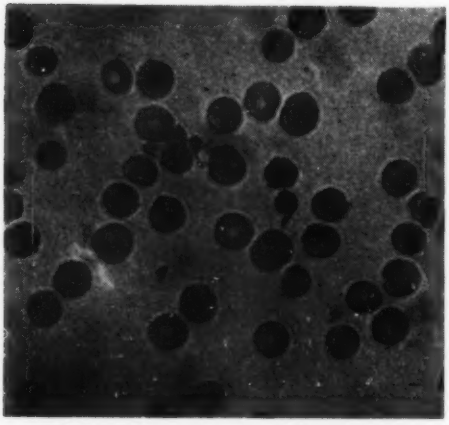
General soaking rains covered practically the entire western range area during October and November, including those sections suffering severe drought conditions for the past five years.

Cattle and calves are reported in prime condition. Good grazing and generally mild weather have extended gains during these months when shrinkage is usually anticipated. This has resulted in restriction of movement to market and a strong demand for brood cows and light feeders. Present indications point to a significant increase in carry over supplies in the months ahead.

On Current Disease Problems

RESEARCH ACTIVITIES IN ANAPLASMOSIS

Notes of a paper presented by M. J. Twiehaus, D.V.M., M.S., *Professor and Head, Department of Pathology, School of Veterinary Medicine, Kansas State College, Manhattan, Kansas.*



Anaplama marginale. As high as 50% of the red blood cells may be infected during the ferbile stage of the disease.

Anaplasmosis is an infectious disease of cattle and sheep caused by *Anaplasma marginale* and *Anaplasma ovis*, and characterized by progressive anemia due to destruction of red blood cells. *A. marginale* organism (parasite) increases in size and numbers after invading red blood cells. Extent of invasion of cells is in direct proportion to the percentage of red cells containing bodies. Marginale bodies break into small bodies at the time the red cell disintegrates. In the mature stage, the parasite is composed of a central undivided mass and peripheral rounded bodies of high electron density in submicroscopic units. These units may represent stages in the cycle of the parasite within the red cell, and may explain why blood carriers remain infective, although Anaplasma can not be visualized.

Incubation Period of Marginal Bodies

Incubation can vary from 14 to 45 days. Evidence exists that the infectious agent is present in the red blood cell when no marginal bodies are present. A toxic agent is observed in the blood in acute cases, similar to reactions noted in transfusions with other forms of anemia. If animals survive the first severe attack of marginal bodies, a second attack will be evident within two or three weeks, and others may continue up to one year or longer. These may be a part of the life cycle similar to malaria infections.

Mechanical Means of Transmission

Spread of the disease through mechanical means can be stopped by aseptic procedures. But it must be noted that ticks, horseflies, mosquitoes, deerflies, stableflies, and hornflies have been incriminated as biological vectors ranging from important to unimportant as a source of infection. Certain arthropods serve as mechanical vectors, and others as biological vectors. Biological vectors can account for spread of the disease for years after initial infection.

Animals that have survived an acute attack of anaplasmosis usually remain carriers of the disease for life, although sometimes carrier infection is lost and susceptibility regained. Infectivity titer apparently ascends and drops with serum antibody titer after initial disease attack.

Complement-Fixation Test

Sufficient data exist to indicate that the complement-fixation test is at least 98% accurate, and therefore extremely efficient in detecting carrier animals. Proper use of this test is incumbent on its recognition as an official diagnostic test in a standardized form.

Use of Antibiotics

Although chlortetracycline, oxytetracycline, tetracycline have all been cited for their Anaplasma-inhibitory activity or depressant action on Anaplasma, all are economically prohibitive in routine practice.

Conclusion

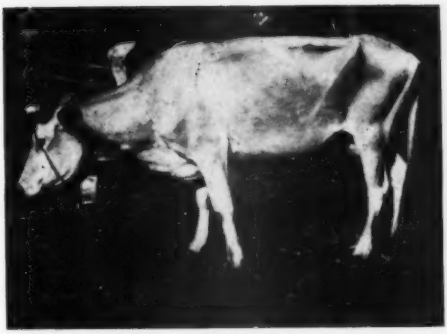
Importance of a standardized complement-fixation test for anaplasmosis can not be stressed too strongly. In order to insure uniform results by different laboratories, uniformity of testing materials, methods, and interpretation are imperative. Such uniformity is impossible to attain unless the antigen, amboceptor, complement, and control sera are produced, standardized, packed, and distributed from a central agency, and the hemolytic amboceptor be approved only by this agency. This agency should be the Animal Disease Eradication Division, USDA.

CLINICAL ASPECTS OF ANAPLASMOSIS

Notes from a discussion presented by John B. Carricaburu, D.V.M., *Santa Ynez, California.*

From the standpoint of a clinician, bovine anaplasmosis is an enigma. Its cause and pathogenesis remains inexplicable. Treatment is largely empirical; no prophylactic system has been devised or recommended in this country, yet in enzootic areas nature has produced carrier immunity at an early age.

Perhaps no disease of cattle has strained practitioner-client relationships as severely as anaplasmosis. Failure to salvage clinically ill or control losses among range cattle has been a major limiting factor in some range operations. A client advised recently that



Typical attitude in anaplasmosis. Accumulating evidence indicates increased incidence of this disease.

this single disease has cost him the equivalent of a well equipped ranch during his active years of ranching.

My practice area is Santa Barbara County, California. The range is mountain and foothill country suitable primarily as beef cattle range. The range is covered with sagebrush which is heavily infested with ticks. These are considered to be quite generally infected with *Anaplasma marginale* due to transovarian passage of infective stages of the organism.

Cattle feeding on this range is seasonal. Native grasses are suitable for grazing from approximately December 1 to May 15 each year. Cattle are imported each year for the grazing season and are then shipped to feed lots. Experience with the disease has dictated some practices of cattlemen and as a result younger calves are being purchased to avoid the acute and fatal form of anaplasmosis common among older animals. Native herds experience a relatively low disease incidence. Recent investigation on one of these ranches, in cooperation with the University of California, revealed that 95% of the animals tested had achieved carrier immunity by the time they were 18 months of age.

Symptoms of Anaplasmosis

Symptoms are classified in the field as mild, acute and peracute. Five feature characterize the disease: (1) Anemia, (2) weakness, (3) febrile reaction, (4) grossly normal urine, and (5) constipation. In addi-

tion examination usually reveals (1) icterus, (2) inappetence, (3) depression, (4) dehydration, (5) labored respiration, (6) irrational behavior. Anaplasmosis is observed clinically as a disease which is generally mild in calves to one year of age, acute but not often fatal in cattle up to two years of age, acute and often fatal in three-year-olds, and often peracute and fatal in animals over three years of age.

Differential diagnosis is possible by positive laboratory demonstration of stained organisms. Clinically, grossly normal urine and constipation, no matter how lush the forage, strongly support diagnosis when exhibited with anemia, weakness, and icterus.

Peracute Anaplasmosis

Peracute anaplasmosis is observed in cow herds moved into our range from noninfected range. Significant losses are sustained. Treatment of these animals reported ill has been unsatisfactory. Early treatment of the acute form occurring in native cattle is more satisfactory if extreme care is taken in handling. Nearly all native ranches have a few of these cases annually. They are apparently animals who have escaped becoming carriers at an early age. Use of tetracyclines have been followed by better results than for any previously employed agent. In acute cases it is sometimes possible to abort all clinical signs when employed in the early stages. A minimum of 3 mg. per lb. of body weight frequently produces definite clinical improvement within 24 to 48 hours. Little change, however, occurs in the hemoglobin picture until about the fourth day post-treatment.

A Case for Prophylaxis

Often outbreaks occur in susceptible herds and disease processes have advanced to the hopeless stage before referred to veterinarians. In these, sodium cacodylate has served usefully when used prophylactically. Clinical course was influenced and losses stopped. In other instances this product has failed completely.

Experienced cattlemen in our enzootic area are well informed on anaplasmosis and understand its processes as they occur in our area. They realize that livestock culture in this county would be economically impossible were it not that nature's vectors and possibly some of their own surgical practices had provided carrier immunity in early life. They conclude that some form of induced immunity is therefore possible and essential for survival in this and other enzootic areas. My experience with anaplasmosis causes me to strongly concur in this opinion.

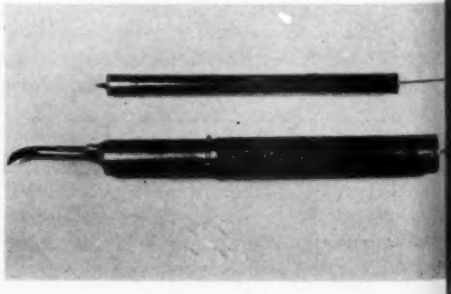
It is the hope of those closely associated with this problem that research will develop a suitable prophylactic vaccine. Detection and elimination of carriers can not in itself answer the problem in many enzootic areas. A workable tool must be made available if anaplasmosis control ever becomes realistic to assure economic livestock operations on many of the nation's great beef cattle ranges.

WHOLE-BLOOD AGGLUTINATION TEST FOR BOVINE BRUCELLOSIS

Abstract of preliminary report by Paul Boulanger, D.V.M., M.S., and A. N. Smith, D.V.M., *Quebec, Canada.*

As the bovine eradication control program advances the importance of an economical and effective procedure to presumptively identify Brucella infected cattle becomes more apparent. This is particularly applicable in range stock. Here a rapid

Fig. 1. Stylet used for puncture of the ear vein and scalpel blade used in cutting the tip of the tail together with the attached wire loop.



method of diagnosis, though serving only as a screening method promises exceptional value.

Sensitivity of the test closely paralleled or exceeded the standard tube and plate serum agglutination test. Increased sensitivity is deemed possible by further screening of strains of organisms or the culture-media employed for their cultivation.

In summary, this research and development gives promise of a useful test of value that will permit a quick sort-out of reactors from negative range cattle. The adoption of this squeeze-chute-side test would have additional value by reducing the volume of testing in diagnostic laboratories.

Development Work

Attention was given first to the preparation of a suitable antigen for a plate test. Investigations were conducted testing various concentrations of organisms, strains, cultural media, staining, and pH and salt concentration of the final product. That antigen final adopted was a 4% suspension of *Br. abortus* stained with hematoxylin and suspended in physiological saline at pH 4.0 to 4.3 to which an anticoagulant in the form of heparin was added.

Testing technics considered cattle handling problems in Canada. Animals were bled either from the ear vein with a specially designed stylet or from the tip of the tail with a curved scalpel blade. (See fig. 1, 2, 3). One drop of nonclotted blood is taken with the wire loop and mixed with 0.03 ml. of stained antigen delivered with a dropper on a glass plate over a heat controlled box designed for the purpose (fig. 4). Readings are made at various intervals after mixing blood and antigen.

Comparison of Results

Testing was carried out in 41 herds containing 990 animals and compared with the standard tube and plate agglutination test. Herds selected contained reactors and serum agglutination negatives and also recently vaccinated animals.

Fig. 2 Collecting blood from the ear vein of a cow with stylet and a wire loop.

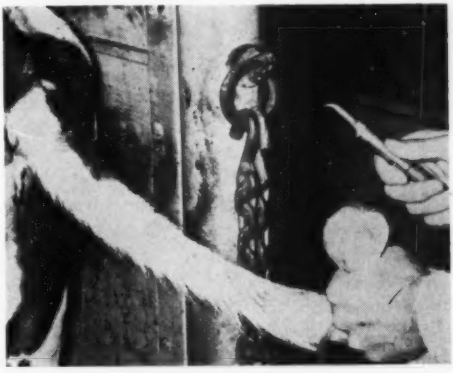


Fig. 3 Collecting blood from the tip of the tail of a cow with a specifically designed curved scalpel blade and a loop.

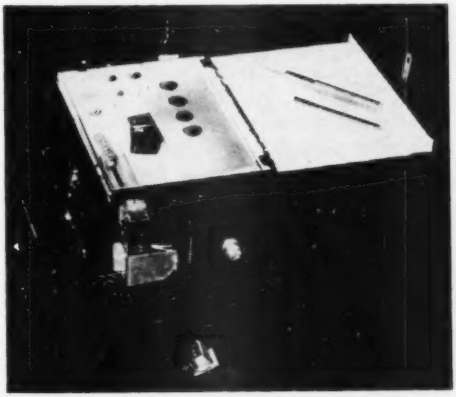
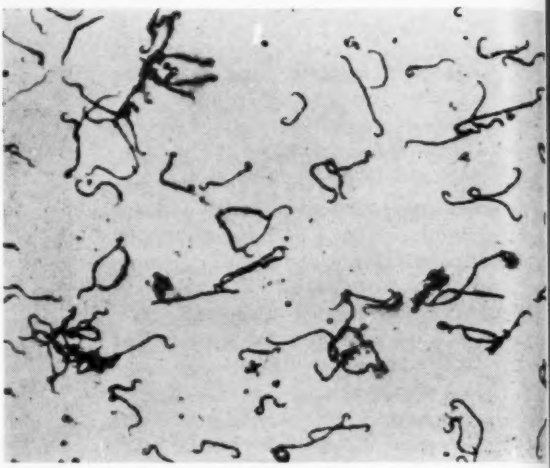


Fig. 4. Incubation box with its thermostatically controlled heat attachment and its movable support.

CONTROL OF BOVINE LEPTOSPIROSIS

Summary of a discussion by S. G. Kenzy, D.V.M., Ph.D., R. W. H. Gillespie, Ph.D., L. M. Bracken, D.V.M., *and* G. H. Keown, B.V. Sc., M. Sc., *Department of Veterinary Science, Washington Agricultural Experiment Station, Pullman, Washington.*



Preparation of spirochetes from culture stained by Morosow's method.

Three *Leptospira pomona* bacterins subjected to extensive experimental trials were found to be comparable immunizing agents in cattle. These bacterins protected 11 of 12 short yearlings against leptospiruria for 18 to 20 months postvaccination. Unsatisfactory resistance developed following vaccination in calves one to two months of age, but those three months of age or older usually developed a high level of immunity.

L. Pomona Vaccine as and Immunizing Agent

A strain of living *L. pomona* vaccine attenuated through more than 500 egg-passages and evaluated as an immunizing agent, gave a more rapid and higher antibody response in calves than the bacterin. The mild nephritis and low-level shedding observed in these studies requires further attenuation of this strain to assure safety of the product.

Experimental Data

Experimental data were presented that 5 mg. of dihydrostreptomycin per pound of body weight twice daily not only stopped urinary shedding of organisms, but prevented its occurrence.

WHEY TEST FOR BRUCELLOSIS

Reporting an extensive survey in Brucella blood-positive herds, Dr. M. H. Roepke and coworkers at the University of Minnesota, St. Paul, concluded that the whey-plate test is not satisfactory as an official diagnostic test for bovine brucellosis. These findings were based largely on lack of agreement with blood tests and sensitivity for identity of blood positive reactors.

FEDERAL-STATE COOPERATIVE TUBERCULOSIS ERADICATION

Notes of a paper presented by A. F. Ranney, D.V.M., *Chief Tuberculosis Eradication Section, Agricultural Research Service, USDA, Washington, D. C.*

Reports to this Association during the past few years on the status of the cooperative tuberculosis eradication program have consistently called attention to the progress made in reducing incidence of the disease to its present low level. Veterinarians individually and as a group have taken much pride in this accomplishment and have been praised by allied professionals for having forced through to near completion an eradication program which has meant much, not only to the livestock industry, but to the health of the population.

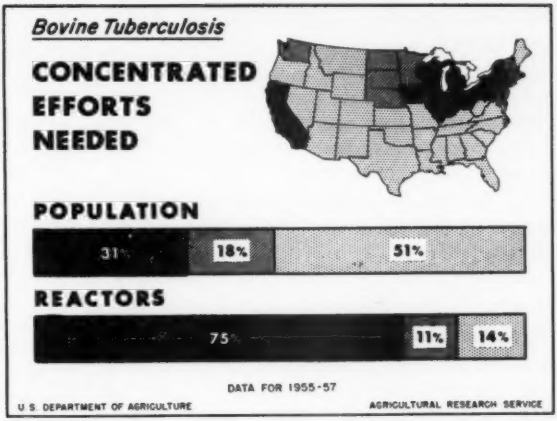


FIGURE 1

A "low incidence" was not the original objective of the program, nor is it now to be condoned. Complacency evident in some quarters and self praise at this time are hazardous. As long as a few foci of infection exist, bovine tuberculosis has potential to spread sufficiently to wipe out gains made. A revitalization of efforts to "stamp out" the disease is essential if indeed we can feel assured that the progress thus far made is secured.

Tuberculosis Infection

An analysis of the present situation regarding existence of tuberculosis infection reveals that it continues to concentrated in the same group of states. Of the more than 4,000,000 reactors thus far revealed and slaughtered, 69% have come from nine states and 24% from 13 other states. A total of 93% of infection from 22 states and only 7% from the remaining 26. It will be noted from the chart that the proportion has remained essentially the same considering figures accumulated for the past three years.

Seventy-five percent of the country's reactors were identified in the nine-state area indicated in figure 2 during the past three years. Only 31% of the total cattle population is contained in this area, mostly dairy animals. The 13 states where 11% of the reactors were found have 18% of all cattle. Only 14% of reactors were located in 26 states containing over 50% of the total cattle population.

Analyzing these charts points up the necessity for reallocation of funds and ef-

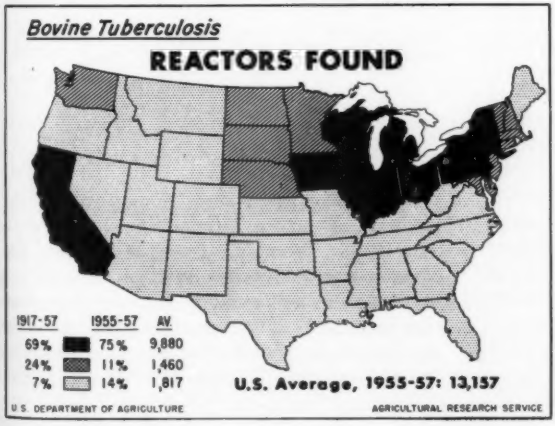


FIGURE 2

fort. Five points are suggested for study and action:

1. Reaffirm confidence in the tuberculin test. Positive attitude must be taken to assure owners and others that the tuberculin test is more dependable than the customary postmortem examination.

2. Quarantine infected herds to prevent spread of the disease by known infected or exposed animals.

3. Emphasize the necessity of proper cleaning and disinfecting of premises that have quartered infected stock.

4. Pursue epizootiological activities to the fullest extent possible.

5. Consideration of where and how to concentrate effort and funds based on facts revealed by epizootiological survey.

SYSTEMIC INSECTICIDES FOR CONTROL OF CATTLE GRUBS

Abstract of paper by A. W. Lindquist, B.S.,M.S., Ds.C., *Entomology Research Division, Agricultural Research Service, USDA, Beltsville, Maryland.*

Investigations of products claimed as systemic insecticides actually go back many years. Only during the past few years have promising drugs been given considerable publicity. Stimulus is the logic of the use of some type of agent to kill migrating larvae of cattle grubs. Treatment in common use is too late to prevent much damage to both meat and hides and serves only to reduce adult heel fly population.

Research has now reached a point where the possibility of a drug having insecticide properties that may be used without danger to consumers of meat appears assured. This report details agents given rather extensive trials and the methods employed to screen or demonstrate toxic properties to insects of one or more stages of their metamorphosis. One of these is observation of the action of various drugs or artificially induced screw worm infested domestic animals. Compounds that destroy screwworms are viewed good candidates for testing against grubs.

Dieldrin, aldrin, lindane, and heptachlor gave promise in experimental animals but when injected into cattle gave poor results, since they failed to kill migrating grubs and furthermore left undesirable quantities of residues in tissue.

Organic phosphates such as diazinon, dipterex, and chlorthion proved similarly deficient in that grubs were killed in the backs of cattle and not during the earlier stages.

Dow ET-57

Dow ET-57 was a major breakthrough since tests in several locations indicated that kills were possible during instar stages. These investigations however, have not progressed sufficiently to determine the safety and effectiveness of low-level feeding under a wide range of conditions. Furthermore, study must continue to determine how the insecticide or its degradation products destroy the grubs. It is possible that direct kill is not affected, but rather a disturbance to the insects' enzymes regulating migration or other activities.

In late September, the USDA and the FDA approved provisional registration of Dow ET-57 for limited use to control grubs.

The compound is available this fall only in local areas of Nebraska, Iowa, South Dakota, and Wyoming. Trials in these areas will be followed carefully, not only from the standpoint of proper usage but of effect on meat and hide damage and fly control. One treatment is required and recommended at the rate of 1 oz. for each 600 lb. of body weight after the heel fly season. Material may be given as a bolus or drench. Treated animals must be held for at least 60 days before offered for slaughter.

Cooperative Research

Cooperative research is being pursued at the laboratories located at Orlando, Fla., Kerrville, Tex., and Cornwallis, Ore., as well as at Beltsville and at research laboratories of commercial producers at a number of locations in the United States. Veterinarians can anticipate further developments and resulting useful products designed to reduce the loss caused by ravages of grubs and other parasites.

VESICULAR DISEASES

Notes of a report by R. A. Bankowski, D.V.M., *Davis, California*

Of the three vesicular diseases with which this Committee is concerned, no foot-and-mouth disease has been recognized in the United States since 1929. The last reported case of vesicular exanthema in swine was in November 1956. In contrast, enzootic vesicular stomatitis is prevalent in restricted areas of the nation and has existed as a relatively mild infection probably continuously for a century or more.

Vesicular Exanthema

Though no new cases have been reported for 12 months the danger of infection exists because of the delays in passing state legislation in some states and inadequate inspection to assure adequate processing in others. A New Jersey law requiring garbage cooking becomes effective on January 1, 1958. The effects of this law give promise of limiting a hazard to the swine industry of New Jersey. Public health aspects are also involved and are certainly not secondary considerations.

An act to repeal the garbage cooking law of Massachusetts is being considered in that state. If this test succeeds it will be a major blow to sensible livestock disease control and public health legislation, and indicate that political pressures are more important to legislators than the health of their constituents. Certainly it has been made clear that the control of vesicular exanthema by garbage cooking also controlled other diseases of both animals and man.

Vesicular Stomatitis

The Committee recommended a year ago that vesicular stomatitis be made reportable. Like many diseases imposed by the evolution of nature, this one has appeared in various forms. Dependable data of incidence need be collected. It is also believed that misdiagnosis is common and that nonvesicular stages of vesicular stomatitis are mistaken and termed mycotic stomatitis. Proof of this is positive serological findings in nonvesicular cases reported as mycotic stomatitis.

A set of goals are recommended which include, in addition to classifying the disease as reportable, that steps be taken to prevent movement of infected and exposed animals, confirm clinical diagnosis, and pursue studies to determine enzootic areas, and why these remain infected, and the influence of the disease on the livestock economy.

Foot-and-Mouth Disease

Practically all counties of Europe suffered outbreaks of foot-and-mouth disease. Vaccines are being employed in most counties except England, where the slaughter method is depended upon to restrict spread between farms. France reported the disease on 89,929 farms during the period January to November 1957.

Turkey has reported the most severe outbreak in 20 years.

Research Development

Most significant development during recent months is the work at the Plum Island Laboratories in the purification, isolation, and electrophotography of the virus particles of foot-and-mouth disease. These have been shown to be extremely small spheres which may be clumped by the addition of type-specific antiserum.

ENZOOTIC VESICULAR STOMATITIS

Notes of paper presented by R. P. Hansen, D.V.M., *and* L. Karstad, D.V.M., *University of Wisconsin, Madison, Wisconsin.*

Researchers in Wisconsin have interested themselves in vesicular stomatitis as it occurs in a variety of animals, both domestic and wild, in Wisconsin and elsewhere. The disease has occurred in Wisconsin affecting thousands of cattle and horses in epizootic patterns at intervals of about ten years.

Enzootic vesicular stomatitis, characterized by scattered cases occurring each sum-

mer (May until frost), has been observed and reported in the southeastern states. Here swine are frequently infected as contrasted in epizootic areas where cattle and horses serve as primary hosts.

Questions of Geographical Restriction

Important questions remain unanswered concerning this disease and the reasons for its geographical restrictions. What accounts for its seasonal occurrence? What maintains virus over winter? What are the transmission mechanisms involved?

Collection of field data by questioning residences of known enzootic areas, and conducting serological surveys in the human population, domestic animals, and wildlife to determine prior infection was supplemented by laboratory work.

Criteria have been established for determining whether or not the disease vesicular stomatitis is present in an area in enzootic proportions. It may be designated enzootic if (1) 50% or more of the cattle and swine, regardless of age, carry virus neutralizing antibodies against the disease virus, (2) virus neutralizing antibodies are found in wild animals, and (3) vesicular stomatitis has been diagnosed by virus isolation or serology for a number of successive years.

Survey Results

Surveys have been productive. Results from southeastern Georgia indicate that approximately 45% of the domestic swine, 50% of the cattle, and 80% of the horses and mules carry antibodies against the New Jersey type of vesicular stomatitis virus. Of feral swine, about 75% gave evidence of prior infection as did 45% of raccoons and 60% of the deer tested. In this same general area, the Georgia State Public Health Laboratory reported 30% of the population were found on sampling to be carrying neutralizing antibodies against the same virus. Further surveys indicate that the enzootic area of the southeast is restricted to the Coastal Plain, and the Fall Line which separates the Coastal Plain and Piedmont regions may be said to form the upper boundary of that area.

FIELD USE OF MODIFIED LIVE VIRUS HOG CHOLERA VACCINES

Notes of paper presented by C. L. Campbell, *D.V.M., Florida State Veterinarian, Tallahassee, Florida.*

It will be recalled that there was organized within the structure of the U. S. Livestock Sanitary Association a Committee on the Nationwide Eradication of Hog Cholera, in 1951. During the following two years (1951-1953), considerable study was given the problem with some particular attention to the then recently developed modified live virus vaccines, and what might be expected of them in an eradication program. The hypothesis had been earlier advanced by the parent Committee that in order to eradicate cholera it would be necessary to eliminate the use of simultaneous virulent virus.

In 1953, the Committee appointed a subgroup to tackle the problem of selecting a pilot test area in which the suggested program would begin. This subcommittee proceeded to draw up methods of procedure, financial arrangements, and other details. Suwannee and Hamilton Counties in Florida were selected as pilot test area. Geography of the area, bounded on three sides by water, made the area adaptable to effective quarantine. A further point for selection was the policy of the state of Florida to furnish state-purchased hog cholera immunizing products for distribution through the office of the state veterinarian; a state program in operation for over 30 years. In addition veterinarians throughout the state were interested in the project.

Recent Reports

Each year since reports have been favorable as regards the immunizing potential of the several types of hog cholera modified live virus vaccines. During the three-year period between July 1, 1954 and June 30, 1957, 1,056,947 swine were vaccinated in Florida — 748,755, or 70.8% of which received the modified live virus vaccine. Acceptance of these new products increased markedly in this short span of months as evidenced by the fact that during the first

six months of the period 12% of the total vaccinated received modified virus, whereas during the last six months 82% of swine vaccination received one of these agents Florida has now "outlawed" virulent virus and though some inactivated vaccine will be employed, sufficient data is now available and has been given such wide publicity that an ever greater percentage of swine will be vaccinated with the modified live virus vaccines.

Reports from Pilot Test Area

Field reports compiled from the pilot test area during 1956 reveal that 40,727 swine were vaccinated in Suwannee County during the year — all with modified live virus vaccine. This represented 11.3% of the total number vaccinated in the state. Of 439 deaths reported during the period, none occurred in the supervised county. In contrast, during the year proceeding the inauguration of the pilot test area, 25% of the states' cholera infection was reported from this area. Practitioners located in the County reported not even a case of slight postvaccinal reaction. It can be understood that growers are enthusiastic.

The Hog Cholera Research Station established at Live Oak, Florida is provided with facilities to study the disease and statistical material as well as conduct challenge and immunity tests. The group headed by Dr. M. R. Zinober at this Station are carrying out that provision of the plan to determine immunizing value of various agents employed. This to include 1% or more of vaccinated swine from all herds treated. Actually 5.1% of the vaccinees are being challenged. Preliminary results of this work started less than six months ago indicate high protective immunity in hog vaccinated with all three general types of modified live virus vaccine including the tissue culture product and those of either swine or rabbit origin. A total thus far of 620 animals from 335 herds have been challenged through November 6. Of these 595 from 309 herds were shown to be adequately protected. In other terms, this is effective protection in 96% of swine in 92.2% of the herds examined. It is also noteworthy that a few of those challenged had been vaccinated for as long as two years. Average postvaccination challenge was 255.3 days.

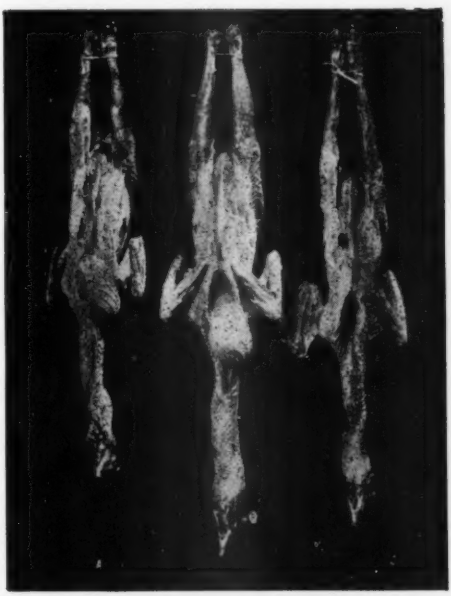
Program Value

The program in the area has provided increased profits to growers through marketing of larger number of hogs. It promises even greater advantages and freedom from the threat of disease that has plagued the swine industry in this country for over a 100 years.

TRANSMISSIBLE DISEASES OF CHICKENS

Notes of a report by M. S. Hofstad, M.S., D.V.M., Ph.D., *Professor of Veterinary Research, Iowa State College, Ames, Iowa.*

With no major new problems confronting the poultry industry the past year, considerable progress was made in solving disease conditions. Discovery that the virus of visceral lymphomatosis can be cultivated in



Naturally infected tuberculous chickens. Emaciation noted in these birds is a common symptom.

tissue cell cultures should be of great importance in working with this disease complex.

The report dealt rather exhaustively with most of the diseases to which poultry are susceptible. A list of 121 separate references of recent literature is appended. All practitioners interested in poultry should have this complete report for study and guidance. It will be published *in toto* in the Proceedings Book scheduled for distribution by early spring.

Chronic Respiratory Disease (CRD)

Knowledge of chronic respiratory disease has increased, although the problem is far from solved. Newcastle's disease has become a diminishing problem, indicating that available vaccines are effective or flocks are not being challenged by field strains of the virus. Avian infectious bronchitis is under control, probably due to widespread use of modified, live virus vaccines.

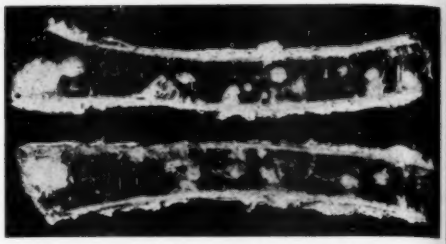
Chronic respiratory disease and infectious sinusitis has proved difficult to diagnose, and more controlled experimental work is required to evaluate treatment and control. Streptomycin continues as a popular and widespread treatment for breeding flocks in an attempt to control egg transmission.

Ornithosis in turkeys continues to be a public health problem, dramatized during the past year by federal restrictions in interstate movement of affected flocks.

Other Disease Problems

Fowl cholera has not appeared in epizootic form during the past year, and fowl pox is apparently being controlled by immunization with fowl pox vaccine by the "stick" method. Studies on avian leukosis complex, avian encephalomyelitis (epidemic tremors), salmonellosis, and infectious hepatitis indicate that these disease conditions, although nominally under control, bear additional consideration in diagnosis.

Erysipelas in turkeys appeared in spotty outbreaks in areas where turkey production is of commercial significance. Penicillin in almost any form has proved to be an effective treatment.



Numerous tuberculous nodules in the myeloid tissue of the femur of naturally infected chicken

Factors involved in field outbreaks of hemorrhagic syndrome have not been established, and at the same time the disease has presented no great problem to poultry growers.

Infectious synovitis (IS) has been diagnosed in major broiler producing areas and appears to be cyclic in incidence. Experimental work indicates that certain antibiotics will control IS.

Poultry Inspection

Increased consumption of poultry products should result from passage of the federal Poultry Products Inspection Act. The law applies to plants involved in interstate shipment of dressed fowl. The problem of unwholesome meat and meat products may continue at a local level, however.

Recommendations

Action should be taken to change existing regulations which prevent the Pure Food and Drug Administration from releasing information on toxicity of new drugs. The necessity of awaiting results from independent workers would be eliminated. Similar action is necessary also with reference to biological products under the jurisdiction of the Biological Products Licensing Section of the Agricultural Research Service.

Some effort should be made to recognize PPLO free flocks. Either of three serological tests — the serum plate, the tube agglutination (0.08 serum + 1 ml. antigen), and the HI tests — should be used to determine CRD status of flocks. By testing 10% of a flock with negative findings at three to five months of age, breeder flocks free of PPLO could be recognized. In turkey flocks, use of tube agglutination and HI test are recommended.

POULTRY DISEASE CONTROL PROBLEMS

Notes of an address presented by R. L. West, D.V.M., *St. Paul, Minnesota.*

No essential difference exist between control or eradication of diseases of poultry and those of other domestic animals. The diseases only present a separate problem which is complicated by economic factors and established practices. It appears that the time has arrived when livestock disease control agencies realize their obligations to the poultry industry, no longer a farm dooryard activity exclusively the premise of the farmwife, and proceed in an acceptable manner to discharge the obligations of the office toward servicing the relatively new and growing industry.

Antemortem examination of poultry.

Maintenance of flocks in restricted quarters, immense concentrations of several classes of poultry, and other considerations that occur after only superficial consideration have all tended toward increased losses due to disease. Unfortunately, treatment, control, prevention, et cetera of poultry disease have remained largely in nonprofessional hands. This is not to say that leadership, research, and program planning has not had the guidance of special trained veterinarians.

An example of a disease control program that has worked exists in this field. The National Poultry Improvement Plan for pullorum control may be pointed out pridefully. Because each disease of any species requires study and appropriately applied control measures to be successful, a demand has been created for establishment of effective disease control measures for other diseases of poultry. These must be based on carefully documented research work concerning the pathogenesis of a disease and its etiology and the development of a plan aimed at breaking the disease cycle. These matters require the best professional talent available.

The Disease Control Official

Legislation has granted legal authority for the functioning of established state disease control officials in poultry disease control problems. However, long established precedent has placed authority in the hands of special groups. The terms "livestock" and "domestic animal" embrace poultry in the Minnesota code and no doubt in those of other states. In these instances, the state veterinarian has been granted necessary legal authority.

Confidence of the industry in the interest, even ability of state livestock disease control agencies, is questioned by the poultry industry in some instances. Success of any efforts must be based on mutual confidence and cooperation.

Selection of contact personnel must consider special qualifications and adaptation of persons to be delegated to the special work. More emphasis has been given poultry diseases in schools and colleges during recent years so that younger veterinarians are most likely to be best suited for detail work.

Financial problems add to any agencies' dilemma. Experience has demonstrated that the industry is willing and anxious to furnish support or even carry some of the financial burden. Care must be exercised, however, that no impediment to impartial control activity be placed on supervisory personnel.

A final problem is necessary extension of work to keep up with industry demands. These have been tremendous during recent years. The poultry industry desires and needs regulatory services to assure continued growth. It is expected that resources of the official state group will be provided to supply that demand.

Reports Of Committees

INFECTIOUS DISEASES OF CATTLE

Notes of a report by D. E. Jasper, D.V.M., Ph.D., *Dean, School of Veterinary Medicine, University of California, Davis, California, Chairman.*

D. E. Jasper, D.V.M.
Chairman

Since the most costly diseases of cattle have been recognized by special panel discussions, new observations of special interest on other diseases form the basis for this report.

Shipping Fever

Attention has been focused on Pasteurella sp., and particularly *Pasteurella hemolytica*, since clinical infections have been produced by exposure of calves to *Past. hemolytica*. Severe infections were observed by Carter in calves that appeared to have had inapparent chronic pneumonia prior to exposure. Lesions of chronic pneumonia were produced by a filtrable agent.

Similar findings by Moll and Finlayson in Washington who demonstrated a filtrable agent as a cause of febrile respiratory disease in cattle, and Bliden *et al.*, who noted causal relationship between a virus and pneumonia in sheep, suggest improved knowledge of shipping fever in the future.

Infectious Bovine Rhinotracheitis

Identification of bovine rhinotracheitis as a separate entity from that causing diarrhea or mucosal disease prompted successful propagation of IBR virus on tissue culture, and led to useful diagnostic procedures by virus isolation and serum neutralization tests. Extensive use of vaccine indicates its practical value in controlling the disease. Longevity of immunity conferred by experimental infection is under investigation as well as the host ranges of the virus, carrier status, and effects of stress on recovered animals.

Virus Diarrhea and Mucosal Diseases

Etiological relationships between these disease syndromes are being clarified. Published evidence indicates that one virus is capable of producing clinical signs of illness similar to virus diarrhea, and that mucosal disease can be reproduced by transfer of an infectious agent from one animal to another. Agents involved are seemingly distinct from those responsible for rinderpest.

Listeriosis

Listeria moncytogenes has been associated with fatal meningoencephalitis for two decades. Existing evidence indicates that this

organism can distribute itself through the tissues of the dam and localize in the uterus with resulting *in utero* death of the fetus, abortion, or brief survival after birth. Recognition of the syndrome among human infants and isolation of *L. monocytogenes* from cows' milk point up the role of veterinary medicine in the epidemiological aspects of this disease.

Multiple animal hosts and awkward diagnostic methods (in this case isolation of the organism from the brain) indicate a need for studies on the nature of this phenomenon, and the development of better methods. Immunological responses of the host to this agent should be studied in order to understand the infection cycle as it exists in nature, and to explore immunization possibilities.

Anthrax

An outbreak of anthrax affecting about 1,749 animals in 581 herds in northeastern Oklahoma and southeastern Kansas began in July and was under control by mid-September. Cooperation of state federal and local practitioners resulted in vaccination of animals with a noncapsulated vaccine purchased by the state and offered free to stock owners. Strict quarantines were established on movement of animals and animal products. No anthrax was reported in any of the animals vaccinated ten days previously. Total vaccinated by October 18 involved 3,498 herds, 147,634 cattle, 3,328 horses, 14,247 sheep, 12,281 swine, and 4,859 miscellaneous other animals, for a total of 182,349 animals vaccinated.

In Kansas, reports indicate that there were 284 infected herds and 670 cases. In southeastern Arkansas prompt vaccination in an anthrax endemic area promptly controlled further spread of the disease. Minor outbreaks involved Richland County, Montana and a small area on the Idaho-Utah border; 16 animals died on four premises in the first instance, and 11 cows were reported to have died in the latter.

Complicated by blackleg, malignant edema, leptospirosis, and anaplasmosis, anthrax cases were reported only when officials were satisfied that anthrax was the disease involved. The classic pattern was evident in these outbreaks. Spring floods in Kansas and Arkansas assisted in the dynamic expansion of the fly population which apparently spread the disease.

Genital Diseases

Widespread artificial insemination provides opportunity for control of genital diseases. Wide dissemination of diseases such as vibriosis and trichomoniasis by artificial insemination is a distinct possibility, and because of this consideration should be given periodic examination of bulls used in artificial insemination programs. In addition to the above, consideration should be given genetic defects such as dwarfism, prolonged gestation, and epitheliogenesis imperfecta.

All infective causes in reproductive diseases are not recognized or commonly known. Possibility of listeriosis must be kept in mind.

Johne's Disease

Severe case of infection with Johne's disease; however the subclinical case is a great spreader of infection

Johne's disease has been reported as an increasingly severe problem in many areas, its introduction being complicated by purchase of animals and movement across state lines. Diagnosis is uncertain. No adequate programs for control or eradication have been established. Emphatic attention of research workers and officials is recommended. Consideration should be given to appointment of a special committee by U.S.L.S.A.

TUBERCULOSIS ERADICATION

Report by Glenn B. Rea, D.V.M.,
Pierre, South Dakota, Chairman

Impartial evaluation of the national bovine tuberculosis eradication project indicates that little progress is being made in total eradication, and that the program can hardly be said to be holding its own. Current testing of more suspicious herds and improved tracing of diseased animals to point of origin can not explain the fact that the percentage of animals reacting to the tuberculin test during fiscal 1957 was higher than for any similar period since 1950.

Five Problems

Despite consistent setbacks, the federal-state cooperative goal continues to be total eradication. To this end, diligent consideration has been accorded five problems.

1. Unsatisfactory procedures for identifying cattle and tracing those found diseased to point of origin have prompted the Committee's recommendation that the Association select a member for each of the eight United States areas as presently designed by the Animal Disease Eradication Division, USDA, to work with respective state and federal officials and appropriate agencies to solve this problem. Specific condition in different areas must be considered in relation to the overall national identification picture.

2. Although reaccreditation of areas based on standards of efficiency in tracing cattle found tuberculous at slaughtering establishments is a necessary adjunct to the eradication program, implementation of such rules should be deferred until trace methods are fully worked out. The Committee is opposed to less testing in areas where incidence is relatively high.

3. Although current laws restricting the sale of dairy products to herds free from tuberculosis are valuable, the interest of uniformity demands code amendments mutually satisfactory to officials of the United States Public Health Service and the USDA. Proposals to this effect should be jointly presented to the Livestock Sanitary Association in 1958.

4. The "no gross lesion" reactor is considered a problem in many areas. Further studies with a view to carrying on additional investigations and research in an effort to find means for reducing the severity of this problem should be pursued.

5. Veterinarians accredited for tuberculosis eradication work are frequently inexperienced and inadequately trained, reflecting on policies and procedures of state and federal livestock sanitary officials. Cooperating officials should assure themselves that veterinarians recommended for accreditation are sufficiently trained and indoctrinated to properly perform their duties.

BRUCELLOSIS

Notes of a report by R. W. Smith, D.V.M.,
Concord, New Hampshire, Chairman.

Renewed effort must be made if the goal of a modified certified brucellosis free United States is to be realized by 1960, although there is every indication that definite progress is being made. Nine states and numerous counties are now modified brucellosis free. Testing must be continued even in areas already qualified if the line is to be held in old territories, and advances made in new ones. But to accomplish this, sufficient federal and state funds must be provided.

Recommendations

The following recommendations are submitted in the belief that if adopted they will assist materially in the realization of the completed program.

1. Continued study of the whey plate test is necessary to determine its value.

2. Further research is essential to determine standards in conducting and interpreting the milk ring test (BRT).

3. Measures should be taken to restrict the use of the "shield and V" vaccination tattoo to official work performed under the supervision of a veterinarian.

4. The National Swine Council is invited to canvass its membership regarding brucellosis control with emphasis on suggested regulations on interstate and intrastate movement of swine which may be infected.

5. Changes in the Uniform Methods should be considered with attention to adopting changes that more accurately reflect the intentions of the code.

COMMITTEE ON ANAPLASMOSIS

Notes of a report by K. J. Peterson, D.V.M., *Salem, Oregon, Chairman.*

During the last five years, great strides have been taken in the fight against anaplasmosis. Using the complement-fixation test to identify carrier animals, and slaughter to eliminate them, eradication has almost been achieved in Hawaii.

The Hawaii success story indicates that anaplasmosis can be eliminated from areas where (1) disease is not entrenched, (2) insect vectors transmit the disease by mechanical means, (3) sprays can be used to control vectors, (4) ranchers and veterinarians are cognizant of the necessity for precautionary steps to prevent spread of the disease, and a (5) well administered regulatory program is maintained.

Methods such as these can be effective in the East and southeast, but are of questionable value in the range areas of the West, where biological carriers are prevalent.

In the West the etiological agent may be transmitted through the egg of the tick from one generation to the next, remaining for as long as five years from the time of initial infection of the tick from an animal. Under such circumstances, slaughter technics may be superfluous. Eleven western states are affected by tick-borne anaplasmosis. Loss from this disease in this area approaches millions of dollars annually.

Recommendations

The test and slaughter plan should be used on a heavily infected ranch in the heart of the tick country. Vector control measures with insecticides should also be taken. Only by pursuing eradication on such a scale can it be determined whether eradication of anaplasmosis by existing methods is feasible. If not, development of suitable vaccine is imperative.

This Committee also recommends that the new standardization of the anaplasmosis complement fixation test be adopted in order to obtain a uniform test for field diagnosis and control programs, for import and export shipments, and further research studies. Also, it is recommended that funds be appropriated for the continuing production of anaplasmosis complement-fixing antigen and complement.

LEPTOSPIROSIS

Notes from a report by C. J. York, D.V.M., *Indianapolis, Indiana, Chairman*

Leptospirosis in domestic animals in the United States was first confirmed in 1944, although histopathological and serological evidence indicates that it was present before that date. The causative organisms were isolated in 1946, stimulating many research projects. (See VETERINARY MEDICINE, Vol. 52, No. 11, 1957.)

The primary etiological agent of leptospirosis in cattle and swine is *Leptospira pomona,* although a few cases of infection with *L. canicola* and *L. icterohemorrhagiae* have been reported. Serological work has occasionally detected antibodies of *L. hebdomadis,* usually in herds infected with *L. pomona,* suggesting nonspecific reaction. Antibodies against *L. sejroe* have been detected in some herds, but the organism itself has never been isolated. *L. pomona* is still considered the primary etiological agent of leptospirosis in domestic animals.

L. pomona—like all Leptospira—is localized in the kidney and excreted in urine. Streams and pastures contaminated with infected urine serve as means of transmission. Cattle sometimes shed organisms for two or three months; swine as long as eight months, thereby providing the main reservoir of infection.

Infection in Cattle

After an incubation period of seven to ten days, the more important manifestations of the disease are as follows:

Cattle Under One Year of Age. Illness ranging from acute febrile condition with hemoglobinuria and death, to chronic emaciation and unthriftiness. Weight loss may persist for several months, followed by recovery. Permanent stunting is possible.

Dairy Cattle. Acute febrile illness, loss of weight, declining milk production, and possibly hemoglobinuria, to a chronic illness. During third trimester of pregnancy, abortion is frequently observed.

Beef Cattle. Abortion storms.

Infection in Swine

Abortion near the latter part of gestation, or birth of weak pigs provides the principal identifying characteristic of the disease in swine. However, damage to fetuses results only when infection occurs during pregnancy. Incidence of abortion can vary from only a few to as high as 100% in a herd.

Diagnosis in Cattle

Accurate history and clinical signs form the basis for diagnosis in cattle. Abortions strongly suggest the disease, particularly if other causes such as brucellosis can be ruled out. Use of serological tests is indicated since leptospirosis is a herd problem. Almost all existing tests are valuable, but Stoenner's rapid-plate agglutination appears to be the most practical. The use of this test, or a superior one if developed later, by diagnostic laboratories must be considered the first step in any control program.

Treatment

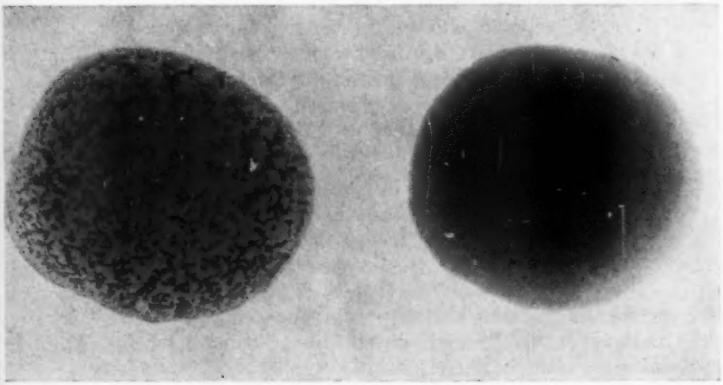
The full impact of leptospirosis can not be ascertained until more adequate reporting systems are developed, despite the fact that the disease has been reported in every part of the United States and Canada. Dramatic results are not now available, regardless of therapy. Antibiotic therapy and the usual supportive measures are of some help, however, although too expensive to receive serious consideration in this report. Reliance must be placed on vaccination, rather than treatment of carrier animals. Commercial vaccines produce immunity for 1½ years in cattle, sometimes six months in swine.

Since control must proceed on a herd basis, isolation and vaccination provide the backbone of any control program.

The Committee believes that there is neither enough information nor a real need for a state-wide control program at present. Emphasis should be placed on control at the individual herd level.

·VM·

Marked clinical improvement and rapid drop in fever characterize treatment of some viral diseases with a lipoprotein-nucleic acid complex (reticulose) previously employed by the Army Medical Corps to treat radiation injuries.



Rapid plate agglutination test for *Leptospira pomona*. Left serum positive; right serum negative.

TRANSMISSIBLE DISEASES OF SWINE

Report by S. H. McNutt, D.V.M., *Madison, Wisconsin, Chairman.*

Although funds that support studies for the advancement of disease knowledge have proved to be sound investments, there has been a paucity of such aid for the study of diseases of swine. In 1953, however, the USDA employed $257,470. in research on such diseases, and an additional $62,200. was supplied by states in cooperative studies. In 1958, the USDA hopes to use $612,155. on research, with an additional $102,240. being contributed by cooperative ventures. The Department is studying African swine fever, brucellosis, leptospirosis, and mycotic diseases. It is also cooperating with other groups in the study of atrophic rhinitis, hog cholera, swine erysipelas, vesicular diseases, mortality in young pigs, and miscellaneous diseases. Less than $1. of every $1,000. of cash income from market swine is invested in the study of swine diseases, a ratio considered inadequate by other industries.

Garbage Feeding to Swine

Despite the fact that a group of diseases including vesicular exanthema, hog cholera, and trichinosis endanger the entire industry through the feeding of raw garbage, 200,000 swine are still being fed the unprocessed refuse of the nation's kitchens. A poll of state sanitary officials indicated unanimity of opinion that the cooking of garbage had reduced disease among swine where regulations required it and periodic inspection had enforced provisions of these regulations. Selfish interests have blocked the passage of laws in some states and continue efforts to repeal those standing in others.

No vesicular exanthema has been recognized for over a year, and since it was a serious outbreak of vesicular exanthema that stimulated garbage cooking laws, pressure is being brought to repeal them. Several diseases, not vesicular exanthema alone, have been held in check through garbage processing. It is vital that all garbage fed to swine continue to be cooked thoroughly, and that police measures continue to assure that it is cooked adequately. The present shameful situation of allowing a relatively few swine growers to endanger a vast industry that is making a significant contribution to the nation's health and wealth is unreasonable. Iowa alone produced over 22,000,000 hogs on thousands of premises. This segment of the industry is under the threat of disease perpetuated through raw garbage feeding.

TABLE 1. States Reporting Trends of Outbreaks

	States Reporting Trends of Outbreaks		
	Increase	Decrease	No Change
Hog cholera	1	17	9
Erysipelas	7	2	17
Atrophic rhinitis	7	....	12
Leptospirosis	9	....	....
Transmissible gastroenteritis	2	....	20
Enteritis complex	1	2	19
Respiratory diseases	1	2	16
Eperythrozoonosis	3	....	....

Virulent Hog Cholera Virus in Vaccination

By June 1, 1957, 14 states restricted the use of virulent virus for vaccination of hogs against cholera by the simultaneous method. Single states will continue to prohibit the use of virulent virus. Though given support by organizations representing the interest of the swine producing industry, including the U. S. Department of Agriculture, American Meat Institute, National Swine Growers Council, American Farm Bureau Federation, U. S. Livestock Sanitary Association, and the American Veterinary Medical Association, the 85th Congress was blocked in its attempt to pass a federal law early in 1957 controlling the preparation, distribution, importation, and exportation of virulent hog cholera virus. Mr. Charles Mills, a lone swine grower from Lewis, Delaware appeared before the congressional committees and single-handedly defeated its passage. Facts are sometimes stranger than fiction.

Disease in Feeder Pigs and Breeding Stock

Answers to a questionnaire indicate that 453,983 swine moved interstate for purpose other than slaughter and show in the states

reporting. In four states movement of feeder pigs was considered a major problem, in 20 a moderate problem, and in seven a nuisance. Other data reported are presented in table 1.

Brucellosis

Due to its unique relationship to bovine brucellosis, reporting states indicate that the disease in swine appears in 1 to 4% of the susceptible animals, except in isolated areas. Hawaii reported 50% herd infection. Fourteen states have a swine brucellosis eradication program; 18 do not.

Recommendations

1. Garbage cooking laws must be enforced indefinitely.

2. The United States Livestock Sanitary Association should endorse passage of a federal law prohibiting use of virulent virus in vaccination of swine, and individual members should work within their states for such laws.

3. The Association should favor a "check-off" law providing that funds from check-off be employed to develop healthier swine as well as all other phases of the swine industry.

NATIONAL ERADICATION OF HOG CHOLERA

Notes of a report by J. G. Milligan, D.V.M., *Alabama State Veterinarian, Montgomery, Alabama, Chairman.*

Included in this was statement concerning a news item that was given wide circulation in the farm press. Great Britian has expressed a willingness to purchase pork and pork products from those states in which vesicular exanthema does not exist and which have taken the necessary steps to ban the use of virulent hog cholera virus. Regardless of the quantities of these products that may move in foreign commerce as a result of this important announcement, it is significant and should have a favorable effect on the economy of those states that have already taken recommended steps to outlaw distribution, sale, or use of virulent hog cholera virus for immunizing proc dures. It will probably stimulate action the Congress toward that bill now in t Agricultural Committee that would restri virulent hog cholera virus on the nation level. This action is long overdue.

Progress toward accomplishment of t Association's recommendations as propose by this Committee several years ago is a parent in that states outlawing virule virus increased from eight to 16 during t past year. More are expected to take suc action with or without passage of the pr posed national legislation.

The Committee estimated that at t present, less than 20% of all swine in t country are being immunized by the o simultaneous method. In the light of th fact alone, there no longer exists a plausib reason for its continuance.

PARASITIC DISEASES

Notes of a report by F. R. Koutz, D.V.M., *Columbus, Ohio, Chairman.*

External parasites, particularly the wa ble or heel flies, *Hypoderma bovis* and *Hy poderma lineata*, have been estimated t cost the livestock industry an annual lo ranging from $100,000,000. to $300,000,00 This loss is occasioned at various stages the life cycle of the parasites to which ca tle are hosts.

The Life Cyc

Flies deposit their eggs during annoyi attacks that stampede cattle, accounting fo loss of weight and milk. More weight an milk production are lost when larvae pene trate the skin and migrate through muscle and tissue. But economic loss is most dra matically noted when packers encounte encysted grubs causing greenish-yellow gelatinous, edematous areas, and pus pock ets that must be trimmed. Grubs that ar overlooked by the packer ultimately mater alize in the nation's kitchens where the deal a damaging blow to public confidenc in the meat industry.

(Continued on page 45)

SMALL ANIMAL PRACTICE

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The Anabolin rationale – Each Anabolin tablet contains a balanced combination of thyroid globulin (Proloid®), methyltestosterone and ethinyl estradiol. Thyroid globulin, the highly purified extract of thyroid, is a metabolic speed regulator influencing every cell in the body. The thyroid globulin in Anabolin helps overcome hypothyroidism manifested by such symptoms as sluggishness, obesity, poor hair quality, poor appetite. (Many older animals actually suffer from hypothyroidism, yet there may be no signs of thyroid deficiency.)

Thyroid globulin also triggers into action the combined anabolic effects of the androgen and estrogen in Anabolin. Ethinyl estradiol improves cell membrane permeability, influences all body tissues by helping transmit nutrients through the cell wall. Methyltestosterone plays an equally important role in protein metabolism. Absence or inadequacy of androgen is believed to be responsible for loss of protein from all cells, muscle, and bone in the aged animal.

The Anabolin formula – In Anabolin, the amounts and balanced proportion of thyroid globulin, methyltestosterone and ethinyl estradiol have been clinically selected so that only the desired anabolic effects are obtained. Anabolin contains Proloid (thyroid globulin) 16.0 mg. (¼ gr.), methyltestosterone 2.5 mg., and ethinyl estradiol 0.005 mg.

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Laboratories MORRIS PLAINS, N. J.

Research reported herein was designed to test urography technics in the dog without use of anesthesia. Various intravenous contrast media having proved low toxicity levels by experiment on dogs were evaluated. The project was supported in part by a grant from the Mark L. Morris Animal Foundation, Denver, Colorado. Dr. Gus W. Thornton performed his portion of the work reported while a senior student at Oklahoma State University.

Intravenous Urography Studies in the Unanesthetized Dog

NEWTON B. TENNILLE, D.V.M.
and GUS W. THORNTON, D.V.M.

College of Veterinary Medicine
Oklahoma State University
Stillwater, Oklahoma

SUCCESSFUL intravenous urography studies have been made on anesthetized dogs usually with the aid of compression bands.[1,2,3,4,5,6] (See *x*-ray 1.) Excellent urograms have been produced of the unanesthetized human patient with or without the aid of compression bands. To date successful intravenous urography studies of dogs without the use of anesthesia and compression bands have not been reported in the literature.

The trend is toward a longer life expectancy in dogs, as a consequence an increase in urinary problems associated with old age can be expected. Intravenous urograms should be valuable aids in diagnosis, treatment, and prognosis for many of the urinary problems in canine patients. Most animals with urinary distress are questionable anesthesia risks. Even so, possibility always exists that urography studies will indicate the need for surgery and anesthesia. Therefore the elimination of anesthesia in making a diagnosis is desirable for the welfare of the patient.

Much of the developmental work on intravenous contrast media for urography in human beings was first performed on dogs. References are made to the technics employed and toxic levels of various contrast media.[7,8,9,10,11] The purpose of this research project was to determine whether technics for intravenous urography could be successfully developed for the dog without the use of anesthesia and compression bands.

Methods and Materials

Sixteen dogs of mixed breeding, various ages and body types were selected. Clinical examinations were made of these eight males and eight females; they were weighed, tattooed, photographed, caged individually, and a case record started for each animal.

Fecal examinations were made, and when indicated, animals were treated for internal parasites. All those suffering skin lesions were clipped and treated as indicated. External parasites were controlled by periodic dipping with a technical chlordane solution.*

Preliminary blood studies and urine analyses were made for each of the animals

*Engo—Ft. Dodge Laboratories, Ft. Dodge, Ia.

Fig. 1. Restraint and positioning for ventrodorsal intravenous urogram.

(table 4). Ventrodorsal (fig. 1) and standing-left-lateral abdominal survey radiographs were made of each dog at the beginning and termination of the project.

Four dogs under complete anesthesia were used for preliminary intravenous urogram studies and an attempt was made to evaluate various intravenous contrast media (table 2). Routes for administration of the media, positioning of the patient, types of compression appliances, and radiography exposure factors were evaluated.

The 12 remaining dogs were used for intravenous urographic studies without anesthesia. All possible variables were investigated, including preparation of the patient, *e.g.*, starvation period, enema, et cetera. The routes and speed of injection for the various contrast media were studied. The dosage of contrast media in relation to the size of the dog, and the time after injection of contrast media to produce the most diagnostic radio-

X-ray 1. Dog M-2; Position VD. Radiogram 30 minutes after intravenous injection of 30 cc. of 50% hypaque. Gauze compression band; anesthesia.

X-ray 2. Dog M-13; Position VD. Radiogram 30 minutes after intravenous injection of 30 cc. of hypaque. Pneumatic cuff; no anesthesia.

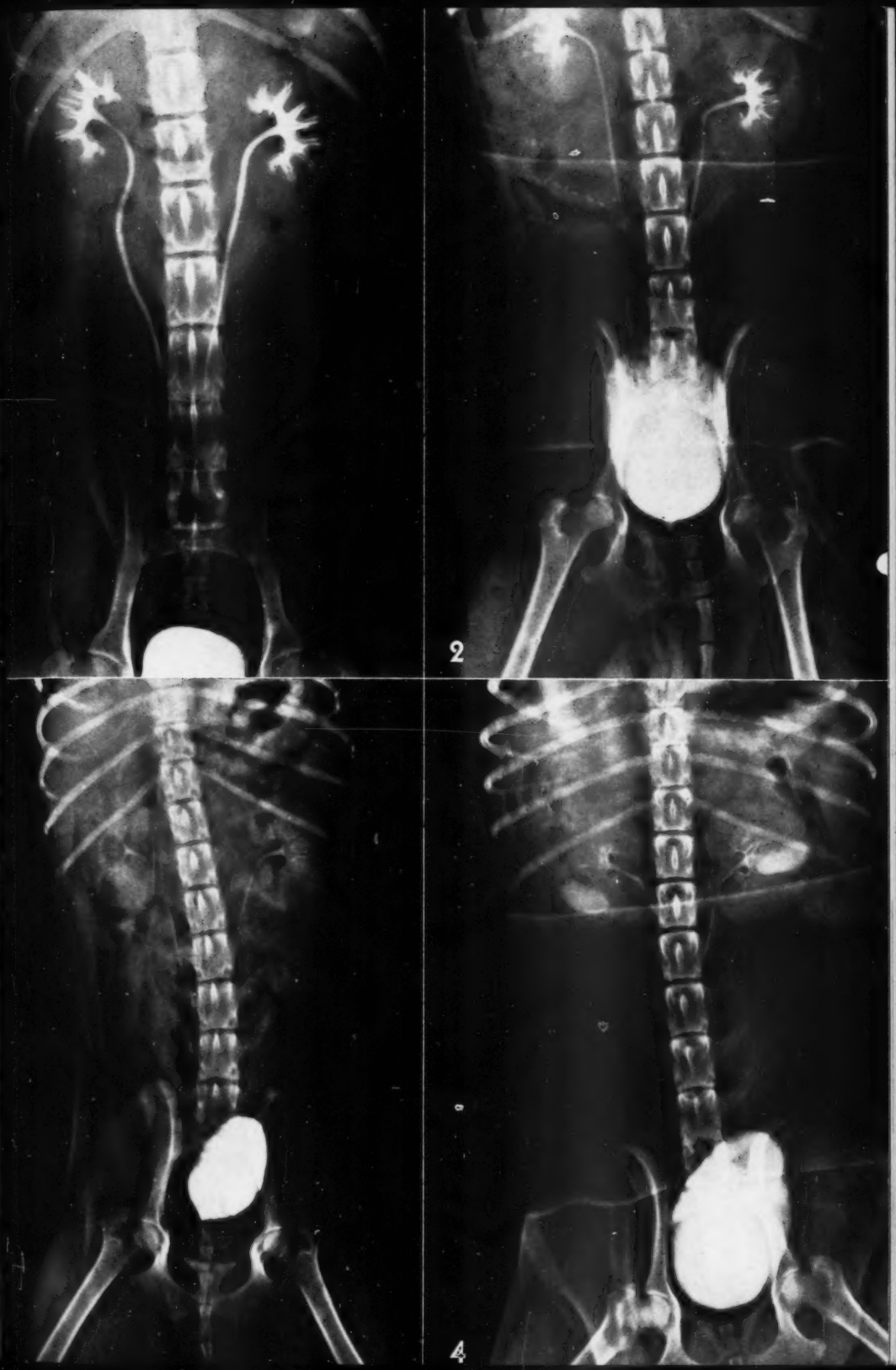
X-ray 3. Dog M-15; VD. 20 minutes after intravenous injection of 30 cc. of 50% hypaque. No compression band; no anesthesia

X-ray 4. Dog M-10; VD. 20 minutes after injection of 30 cc. 50% hypaque. Pneumatic cuff and sponge block.

TABLE 1. Description of Dogs Used

Animal	Age** (yr.)	Sex	Breed	Weight (lb.)	Abdomen Dorsoventral Thickness (cm.)	Lateral Thickness (cm.)	No. of Urogram Series Made
M- 1	7	M	Terrier	18	13	13	4
M- 2	3	F	Pointer	32	13	11	3
M- 3	¾	M	Setter	25	11	9	3
*M- 4	1½	F	Shepherd	27	14	12	2
M- 5	3	F	Terrier	21	15	14	4
*M- 6	1	F	Terrier	13	14	14	3
M- 7	6	M	Cocker	32	18	18	6
M- 8	8	M	Mixed	32	18	12	2
M- 9	¾	M	Shepherd	18	13	10	3
*M-10	7	F	Cocker	25	17	14	4
M-11	1	M	Terrier	18	15	15	3
M-12	1	F	Shepherd	22	15	10	1
M-13	2	M	Shepherd	19	16	14	4
M-14	2	M	Pointer	41	22	13	3
*M-15	1	F	Terrier	15	12	10	2
M-16	6	F	Shepherd	27	14	13	1

*Animals whelped during project. **Age estimated.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X-ray 5. Dog M-1; VD. Immediately following injection of 20 cc. 70% urokon. Pneumocystogram.

X-ray 6. Same as *x*-ray 5, 30 minutes later.

X-ray 7 and 8. Dog M-6. Survey radiographs are desirable, both standing laterals and DV before contrast media is used in intravenous urography studies. Contrast media may obscure existing pathology or foreign materials that may confuse interpretation.

graphs were studied. The dogs were also observed for reactions to the contrast media. Again, an attempt was made to evaluate the various contrast media for intravenous urography at different concentrations and dosage levels. In addition compression appliances and positioning of the animal during intravenous urography were studied (table 3).

After the intravenous urography series had been completed final blood and urine studies were recorded (table 4), euthanasia was performed and a complete necropsy examination made on each dog. Histopathological studies were made on sections of the kidneys, ureters, and the urinary bladder of each animal. Any organs exhibiting gross pathology at necropsy were sectioned and histopathological studies made.

Results

These studies indicate that patient preparation was the most important single factor in making satisfactory intravenous urograms.

A starvation period of 12 to 18 hours was found to be desirable to clear the digestive tract of ingesta. Clearer intravenous urograms were obtained when the gastrointestinal tract was empty.

Water should be withheld for approximately six hours before a series is made. This resulted in a faster and greater concentration of the contrast media in the kidneys.

Posterior pituitary injection (0.5-1.5 cc.) given intramuscularly 30 minutes to one hour before administration of the contrast media was found to be effective in clearing the intestinal tract of excessive gas. All of the gas was not eliminated from the gastrointestinal tract in every case; usually, however, most of the gas was expelled.

TABLE 2. Contrast Media Used*

Trade Name	Generic	Solution %	Manufacturer
Miokon®	Sodium diprotrizoate	90	Mallinckrodt Chemical Works, St. Louis, Mo.
Miokon®		50	
Miokon®		30	
Urokon®	Sodium acetrizoate	70	Mallinckrodt Chemical Works, St. Louis, Mo.
Urokon®		50	
Urokon®		30	
Neo-Iopax®	Sodium iodomethamate	75	Schering Corporation, Bloomfield, N. J.
Neo-Iopax®		50	
Renografin®	Sodium and methylglucamine diatrizoate	76	E. R. Squibb & Sons, New York, N. Y.
Diodrast®	Iodopyacet	70	Winthrop Laboratories, New York, N. Y.
Diodrast®		35	
Hypaque®	Diatrizoate Sodium	50	Winthrop Laboratories, New York, N. Y.

*Contrast media supplied by manufacturers listed.

A warm water enema, given one hour before the intravenous urography series was started, was found to be a valuable aid.

Some of the above procedures were impractical and variations would need to be made when studying debilitated animals. However as many of the preparatory procedures as possible should be used in making intravenous urography studies to produce clearer intravenous urograms.

Studies indicated that use of compression bands with sponge block[13] for applying pressure to the ureters aided in concentrating the contrast media in the upper urinary

Fig. 2. Syringe, needle, contrast media, gauze, and sponge block are the materials needed for making good intravenous urograms of unanesthetized dogs.

10

X-ray 9. Dog M-15; VD. Immediately after injection of 30 cc. 50% hypaque. No compression band; no anesthesia.

X-ray 10. Same as 9, except 5 minutes postinjection.

X-ray 11. Same as 9, except 10 minutes postinjection.

X-ray 12. Same as 9, except 30 minutes postinjection. Contrast media is still observed in the kidneys and ureters. There is more contrast media in the bladder than on earlier films.

tract. Fig. 2. Clearer intravenous urograms of the kidneys and ureters were obtained when compression bands with sponge blocks were used, (*x*-ray 2) but diagnostic intravenous urograms usually could be made without compression devices (*x*-ray 3). While the compression band is in place pressure in the posterior abdominal region to block the ureters may cause a temporary posterior paresis, this aids often in restraint of the animal.

Some animals objected to the use of the compression devices. The main objection to the use of both hands and blocks was in the displacement and distortion of ureters, and other abdominal organs (*x*-ray 4) which complicated the interpretation of radiographs.[16] In one clinical case involving a weak and debilitated animal, the abdominal compression caused some respiratory embarrassment.

One method of compression was to restrain the dog on its back on the *x*-ray table. Then a cloth band 6 in. wide was stretched across the animal's lower abdominal region and anchored to the sides of the table. This procedure was unsatisfactory because the animal had to be kept in this position during the entire series.

A satisfactory and inexpensive compression device was to wrap 4-in. gauze tightly around the lower abdominal region starting just in front of the pubis and running forward to the region of the umbilicus. This was easy to apply and the animal usually did not resent the band.

A medical sphygmomanometer cuff was used as a compression band. It was wrapped around the lower abdominal area with the inflatable bladder on the ventral side of the animal. When the cuff was inflated, sufficient pressure was applied to cause effective blockage of the ureters. When the dog was not restrained during the intervals in the radiographic series, the cuff tended to slip out of place. To prevent this occurring before the cuff was inflated one layer of 4-in. gauze was wrapped around the outside of the cuff and tied. This kept the band in place.

Using the principle of the sphygmomanometer cuff, a modified band was prepared. This consisted of the bladder from a sphygmomanometer cuff which was sewn in the middle of a cloth band seven-inches wide and 38 inches long. Three ties were attached to one end of the band and three more in the middle of the side opposite the bladder. The band was wrapped around the animal with the bladder over the ventral abdominal region. It was then tied and inflated (fig. 3). The band remained in place and worked efficiently.

A cellulose sponge block (fig. 2) placed under any of the above mentioned compression bands was a good compression aid. This block cut from a cellulose sponge should measure 3½ x 2 x 2 in. A V-shaped piece

TABLE 3. Methods Used for Restraint and Compression Devices

Anesthesia	Restraint	Compression Band	Other Aids
Nembutal®	Tied to table	None	None
Nembutal	Tied to table	Band tied to *x*-ray table	None
Nembutal	Tied to table	Gauze band around abdomen	None
Nembutal	Tied to table	Gauze band around abdomen	Sponge block under band
None	Manual	None	None
None	Manual	Gauze band around abdomen	None
None	Manual	Gauze band around abdomen	Sponge block under band
None	Manual	Sphygmomanometer cuff around abdomen	None
None	Manual	Sphygmomanometer cuff around abdomen	Sponge block under cuff
None	Manual	None	Air in urinary bladder
None	Manual	Modified pneumatic cuff	None
None	Manual	Modified pneumatic cuff	Sponge block under band

®Abbott Laboratories, North Chicago, Ill.

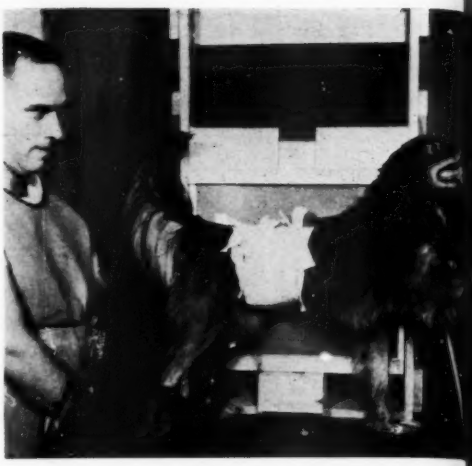

Fig. 3. Modified pneumatic compression band for intravenous urography studies.

was removed from one side of the block so that it could be comfortably placed across the ventral abdominal area just in front of a vertical plane through the anterior border of the tuber coxae. The block was held in place and a band applied over it. This method suggests that when a compression band is used, a sponge block is recommended because it aids in applying pressure to ureters.

Inflation of the urinary bladder with air — pneumocystogram — as an aid in concentrating the contrast media in the kidneys and ureters was investigated.[13,14,15,16] (See fig. 4 — *x*-ray 5 and 6.) The animal was catherized, 60 cc. of air (less in small dogs) was injected slowly into the urinary bladder after which the catheter was removed. The pressure of the air in the bladder aided in holding media in the ureters and kidneys. Good urinary bladder contrast resulted when both air and contrast media were in the urinary bladder (*x*-ray 5 and 6). Radiographs of the kidneys and ureters using this method were not materially clearer than those without air in the urinary bladder.

Removal of the compression devices before making the last radiograph of the series was investigated. No advantages were noted from this procedure. When a compression device is used it should be put in place just before the contrast media is injected and it should be left in place until the last radiograph is made.

Contrast Media

Good diagnostic radiographs were made with all of the contrast media listed (table 2). Urogram quality varied more from dog to dog than between the various contrast media. Good urograms were difficult to obtain with any contrast media on some dogs and on other dogs they could be obtained with most of the media. Hypaque® (50%) generally produced better intravenous urograms than the other media used in this study.

For routine procedures 50 or 75% concentrations of the various contrast media were most satisfactory. Undesirable patient reactions to the contrast media seemed to increase with concentrations above 70%. Thirty per cent and 35% concentrations did not produce intravenous urograms of as good a quality as did the higher concentrations. Where indicated, in debilitated animals, the lower concentrations can be used and diagnostic radiographs usually obtained.

A dosage of 20-25 cc. for most of the contrast media was found to be satisfactory. Dosage generally should not exceed 30 cc. and may be reduced to 15 cc. for small dogs. Dosage may need to be reduced even further in younger animals.

The contrast media should be administered intravenously after all preparations have been made for the first radiograph. The cephalic vein proved to be the most satisfactory route of injection. The entire dose should be drawn into the syringe and the manufacturers' instructions followed as to rate of injection. Although the patient may struggle slightly at the beginning of the injection, this should be ignored and the injection continued.

On several occasions extravasation of the contrast media occurred during injection.

®Diatrizoate—Winthrop Laboratories, New York, N. Y.

The only reaction observed was a slight pain at the time and a moderate swelling the following day. The swelling subsided in all cases in a period of 48 hours. At necropsy, no gross evidence of the extravasation was observed.

Some physical reactions to the injection of the contrast media occurred. These included nausea, vomiting, flushing of the skin, urticaria like lesions, and vertigo-like seizures. In 48 urograms on the 16 dogs nausea occurred 14 times and vomiting 11 times to note the most common reactions. On five occasions these were repeat occurrences in the same animals. Nausea lasted for a period of only one to two minutes. Flushing of the skin and urticaria like lesions in the region of the genitalia were noted twice in the project, both of these being repeat occurrences on the same animals. Usually the skin reactions lasted 15 to 30 minutes with no apparent discomfort. In one animal, urticaria like lesions occurred on injection of all of the contrast media tested and persisted for four to six hours. This caused no apparent discomfort. Signs of vertigo-like seizures were observed in two dogs. These were of short duration, usually disappearing by the time the injection was completed. If reactions became severe, injections were stopped and antihistamines administered. Care should be taken to remove the muzzle, if used, when nausea occurs so vomitus will not be inhaled. Reactions appear to depend mostly upon the individual animal and to a lesser extent on the contrast media used or its concentration.

For best results, *x*-ray equipment with a capacity of 75 Ma, and 90 KvP and timers capable of making 1/20 second exposures are necessary. Exposure factors are given in the Technic Chart (table 5). A grid cassette or Buckey diaphragm is also needed for good intravenous urography results.

Each radiograph must be properly labeled and identified. Survey radiographs

X-ray 13. Dog M-2; VD. Same as no. 1 except 10 minutes after injection of 30 cc. 50% hypaque. Gauze Compression band; anesthesia.

X-ray 14. Same as 13, except position DV.

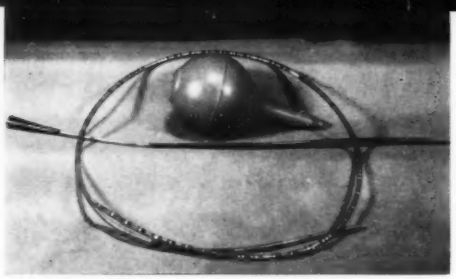

Fig. 4. Catheters and a 2-oz. rubber ear and ulcer syringe which are used for inflating the urinary bladder for pneumocystograms and some intravenous urography studies on unanesthetized dogs.

should be made just before the injection of the contrast media (*x*-ray 7 and 8). A radiograph should be made immediately after injection of the contrast media (*x*-ray 9) and additional radiographs may be made at intervals of five minutes (*x*-ray 10), ten minutes (*x*-ray 11), and 30 minute (*x*-ray 12). Usually the survey film, the immediate — ten-minute and 30-minute film are all that are needed for diagnosis.

The kidneys of normal dogs will be plainly visible on the urogram made immediately after the injection of the contrast media because the contrasting substance is collecting in the vessels of the kidneys (*x*-ray 9). In normal dogs, the kidneys, renal crest, and upper ureters are outlined on the five-minute film. On the ten, 20, and 30-minute film, tubules, renal crest, ureters, and urinary bladder should be plainly outlined. With impaired renal function, the time varies for the appearance of the structure outlines on radiographs.

Positioning

While the radiographs are being made, ventrodorsal positioning (fig. 1) (animal's back on the cassette) is recommended for

TABLE 4. Blood Urea Nitrogen Determinations and Urinalyses*

Animal		Blood Urea Nitrogen La Motte gm./100 ml.	Uremi-Lab** gm./100 ml.	Specific gravity	Microscopic sediment examinations***
M-1	Prelim.	58	50-75	1.030	CaSo4-T, bacteria (bacillus).
	Term.	66	75-100	1.040	Bladder epi.-T, renal epi.-T, wbc ++
M-2	Prelim.	35	35-50	1.041	Ca. oxylate +, bladder epi.-T
	Term.	40	75-100	1.023	Bladder epi.-T
M-3	Prelim.	30	35-50	1.037	Ca oxylate +
	Term.	25	50-75	1.045	Bladder epi.-T, rbc ++
M-4	Prelim.	20	up to 35	1.047	Bladder epi. ++, rbc-T
	Term.	37	35-50	1.019	Bladder epi.-T, renal epi.-T, renal cast +, wbc-T
M-5	Prelim.	52	35-50	1.050	CaSo4-T, rbc-T, wbc-T
	Term.	60	35-50	1.048	Ca oxylate +, bladder epi. +, renal cast +, rbc ++, wbc +
M-6	Prelim.	68	50-75	1.036	Bladder epi.-T, rbc +++
	Term.	50	35-50	1.033	Bladder epi. ++
M-7	Prelim.	28	75-100	1.041	
	Term.	58	75-100	1.017	Bladder epi. ++
M-8	Prelim.	65	35-50	1.035	Bacteria +
M-9	Prelim.	25	up to 35	1.035	Bladder epi.-T, renal epi. +
	Term.	38	50-75	1.021	Bladder epi. ++, renal epi.-T, renal casts-T, rbc +++, wbc +
M-10	Prelim.	38	50-75	1.036	Bladder epi.-T, wbc ++, (metritis present)
	Term.	45	30-50	1.050	Ca oxylate +++, rbc ++++, wbc ++
M-11	Prelim.	68	75-100	1.042	Ca. oxylate-T
	Term.	72	35-50	1.040	Ca. oxylate-T, renal casts +, rbc +
M-12	Prelim.	30	35-50	1.045	Bladder epi.-T
	Term.	45	50-75	1.041	Renal epi.-T, renal casts-T
M-13	Prelim.	54	35-50	1.045	Bladder epi.-T, renal epi.-T
	Term.	44	75-100	1.025	
M-14	Prelim.	54	50-75	1.049	
	Term.	42	50-75	1.030	Renal casts-T
M-15	Prelim.	35	35-50	1.032	Ca. oxylate-T, bladder epi.-T
	Term.	53	50-75	1.030	Bladder epi. +
M-16	Prelim.	37	75-100	1.043	Ca. oxylate +, bladder epi.-T, renal epi.-T
	Term.	65	75-100	1.030	Bladder epi. +++, renal epi.-T

*All urine samples collected by catherization. **Courtesy of Ellfield Laboratories, Riverdale, Md.. ***All the microscopic urine sedimentation examinations showed varying quantities of amorphous urates. §Animal died—no terminal urinalysis possible. T—Trace. + Positive (more than a trace). epi.—Epithelium.

best visulization of the kidneys and ureters (*x*-ray 13). Dorsoventral positioning is advantageous in special cases because the ureters are more clearly outlined on the radiographs in this position (*x*-ray 14). Standing-lateral positioning (dog standing and cassette held vertically at the dog's side) with a horizontal *x*-ray beam is especially advantageous if displacement of some portion of the urinary tract is suspected. The relative positions of the kidneys, ureters, and urinary bladder are well outlined on radiographs made in this way.

Anesthesia was found to be unnecessary in making satisfactory intravenous urograms of dogs. Best results were obtained when two people restrained the animal while making radiographs. In dorsoventral and ventrodorsal positioning, one person holds both hind legs in an extended position, slightly spread. The other holds both front legs in a similar position so that the dog is comfortable and well-confined with its abdominal region over the cassette.

For making standing-lateral radiographs, a specially designed cassette holder is used with the animal standing next to it. Good standing-lateral radiographs can also be made when an assistant, properly protected with leaded gloves and apron, holds the cassette at the animal's side.

Between the radiographs in a series, the animals were placed in a small kennel near the *x*-ray machine. When a compression device was used, it was left in place. Animals did not appear to object to it or bother it.

No special care was required for the animal after an intravenous series was made. No complications occurred among the dogs used in this study. All were fed and watered as soon as the series was completed.

No gross pathology was noted on any of the animals at necropsy which could be attributed to the use of the contrast media.* Microscopic histopathological studies of section of the kidney, urinary bladder, and ureters of each animal failed to reveal any pathology which could be attributed to the use of the contrast media. The terminal blood urea nitrogen (BUN) and urine analyses (table 4) show no significant changes from the preliminary studies. This would indicate that the contrast media caused no damage to the tissues of the urinary system.

*Staff members of the Veterinary Pathology Department cooperated on this work.

TABLE 5. Technic Chart for Soft Tissue Abdominal Radiographs. Distance Tube to Cassette—30 in. Exposure Time*—1/20 sec. Grid Cassette. Patterson High-Speed Screens.

Thickness part (cm)	Ma	KvP
8	40	69.7
9	40	69.1
10	40	70.4
11	60	67.7
12	60	69.1
13	60	70.4
14	75	71.8
15	75	73.2
16	75	74.5
17	75	75.9
18	75	77.3
19	75	78.6
20	75	80.0
21	75	81.4
22	75	82.7
23	75	84.1
24	75	85.5

*At 1/10 second exposure time use ½ Ma. listed.

Summary

Good intravenous urograms can be made on unanesthetized dogs with or without the use of compression devices. Satisfactory radiographs can be made with any of the intravenous contrast media available. The quality of the radiographs can generally be improved by the use of compression devices which are described. No serious reactions to the intravenous contrast media were observed. Successful intravenous urograms of unanesthetized dogs require attention to patient preparation and familiarity with the procedures for making these studies.

At necropsy no gross lesions or histopathological changes were found in these dogs which could be attributed to the use of intravenous contrast media.

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Colonel Robert R. Miller Named Assistant for Veterinary Services

Robert R. Miller
Colonel, USAF(VC)

Colonel Robert R. Miller, USAF (VC), has been appointed Assistant for Veterinary Services, according to release from the Surgeon General, United States Air Force.

Colonel Miller was born in Boston, Mass., in 1910. He attended grade and high school in Somerville, Mass., and graduated from Ohio State University, College of Veterinary Medicine, in 1942.

Colonel Miller entered on active duty in 1943 and after his training at Brooklyn Army Base and Fort McPherson, Georgia, he was assigned to the United States Armed Forces, South Atlantic, as theater veterinarian with headquarters at Recife, Brazil. Later he was attached to the Joint United States-Brazilian Military Commission at Rio de Janeiro.

On his return from Brazil in 1945, Colonel Miller served with the military district of Washington, and in 1946 was assigned as the north sector veterinarian for Oahu, Hawaii.

In 1949 he became deputy chief of the veterinary service in the office of the surgeon general, Headquarters USAF, and two years later was appointed to the Armed Forces Medical Policy Council in the office of the Secretary of Defense.

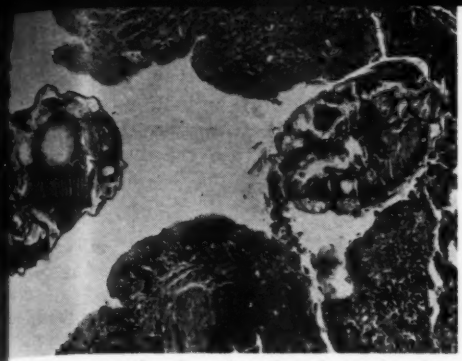
During 1951-52 he was veterinary staff officer with Headquarters, USAF Inspector General, with field office at Kelly Air Force Base, Texas. After graduating from Air War College in 1953, he became the command veterinarian for the Air Defense Command, Colorado Springs, Colorado.

·VM·

Health officials in Colorado have reported a presumably rabid bat from Mesa County. A paralyzed bat inflicted a bite on a domestic cat. Negri bodies were demonstrated on smear made of the bat's brain and brain suspensions injected into mice proved presence of rabies virus. The cat is currently under observation.

·VM·

A public Health Service Report on the status of fluoridation in the United States as of Sept. 1, 1957, showed that 1,532 communities served by 798 water supply systems are receiving fluoridated water. The population of this group is 32,319,603.



Photomicrograph of section through monkey lung (x 450). Note cross section view of *Pneumonyssus foxi* of Weidman. Diagnosis: Arachnid infection of lung.

CASE REPORT . . .

Arachnid Infection in Monkey Lungs

MAX D. SUTTER, D.V.M.
Kansas City, Missouri

DUE TO THE APPARENT increasing number of monkeys in this country, this report is intended primarily to serve practitioner information. This apparent increase in monkey population is due to the growing requirements of research and biological production; establishment of new public and private zoos; and increased demands for pet stock. Monkeys usually are shipped by air or railway express. Many practitioners may receive calls to observe sick monkeys or to autopsy dead ones, and it is hoped that the following information may be of some interest and value.

Several monkeys intended for use in vaccine production, developed persistent hacking coughs, but remained essentially normal otherwise. These animals were all negative to the intradermal tuberculin test. Antibiotic and sulfonamide treatment did not alleviate the symptoms.

Autopsies revealed only pulmonary lesions typical of tuberculosis; therefore, sections of lung were submitted for pathological examination. Grossly, there were many nodules, subpleural in location, but causing slightly raised areas of the pleural surface. These were grayish-yellow in appearance and measured 4-6 mm. in diameter. These nodules appear to be surrounded by a thick wall of chronic granulation tissue.

Histopathology

Sections sometimes indicate foci of consolidation with eosinophiles, lymphocytes and even polynuclear leukocytes. Occasionally, a widely dilated sac is observed. In the walls of these cyst-like cavities are found pigmented phagocytes, and occasionally multinucleate giant cells, which probably represent dilated bronchioles with the walls broken down in many areas; and occasionally in those sac-like areas, partial cross sections of arachnid parasites are seen. Some of the hooks can be made out and portions of the body of the parasite are identified. Other areas through the lungs show emphysema and atelectasis.

Under the dissecting microscope, one of the cystic cavities was opened and some tiny white flecks were found and placed on slides. These mounted specimens were found to be arachnid parasites, with the structure of *Pneumonyssus foxi* of Weidman.

Diagnosis

Chronic granulomatosis inflammation of the lungs due to arachnid infection; so-called *Pneumonyssus foxi* of Weidman.

Dr. F. C. Helwig, pathologist consulted, had published in the *American Journal of Pathology*, vol. 1, no. 4 (July), 1925, a report of arachnid infection in monkeys due to this parasite. In commenting on the case, Doctor Helwig stated that this pulmonary infestation "apparently, according to the literature, is rare. As far as I am aware only one other report of a case appeared in *Lancet* some years ago."

Apparently, persons caring for large numbers of monkeys observe this condition rather frequently, yet there are few reports in the literature and most parasitology texts examined do not mention the parasite. These mites apparently are of low pathogenicity, rarely the cause of death, but undoubtedly their presence is responsible for the persistent cough of affected patients.

Lesions of arachnid infection of the lungs and pleura of monkeys suggest tuberculosis and may be confused with this common disease to which monkeys are extremely susceptible.

RABIES CONTROL IN SAINT LOUIS

Abstract of an address presented by Kenneth V. Shashek, D.V.M., M.P.H., *Public Health Veterinarian and* J. Earl Smith, M.D., *Health Commissioner, Health Division St. Louis, Missouri at the U. S. Livestock Sanitary Association meeting.*

Six rabies epizootics have occurred in the greater St. Louis area, each of longer duration and more serious than the previous one. From 1936 to 1950, an average of 105 rabid animals were reported, chiefly dogs. It was not until a full blown epizootic struck in 1951 that concrete steps were taken to effect an organized inoculation program. Health Division personnel, civic volunteers, and members of the greater St. Louis Veterinary Medical Association participated. In addition to approximately 20,000 dogs inoculated privately by veterinarians, 38,000 dogs were inoculated in 18 immunization clinics located at strategic points throughout the city.

Geographically, St. Louis describes a half-moon along the Mississippi River, with St. Louis County bordering the city on three sides, and the river following the inside of the crescent. Across the river are Madison and St. Clair Counties, Illinois, with East St. Louis, Illinois as the principal center of population. In St. Louis, Missouri, incidence of rabies dropped sharply following the intensified vaccination program. Across the river, however, sporadic vaccination resulted in disease continuance at a relatively high rate.

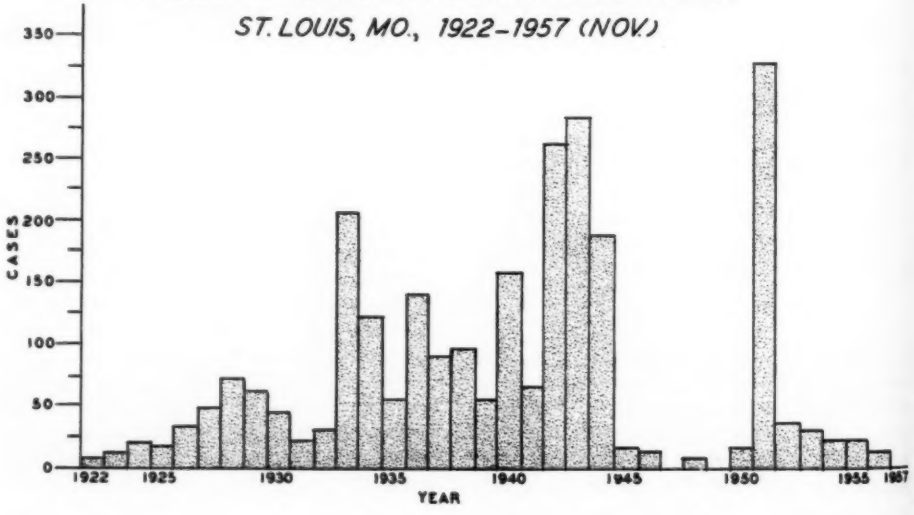
From 1952 to 1956, only 106 cases of rabies were reported for St. Louis. No cases being reported before November in 1957. During a similar period, St. Louis County reported 255 cases, and the East Side Health District 273 cases. Before November 1957, only eight cases were reported in St. Louis County, and one in the East Side Health District.

Rabies Control Under the Health Division

As a result of irregularities in the municipal dog pound revealed by a grand jury investigation in 1953, the Mayor ordered the Health Division to operate the pound pending passage of a new ordinance, an action confirmed by the Board of Alderman a year after. As a part of the communicable disease control activities under the direction of public health veterinarians, a rabies quarantine became effective. Stray dogs were impounded, and biting dogs were held under observation for 11 days, or other arrangements were made for compliance with regulations.

CASES OF LABORATORY CONFIRMED RABIES

ST. LOUIS, MO., 1922–1957 (NOV.)



Reorganization of the dog pound embodied transfer of personnel to civil service, extensive repair of facilities, revision of records, imposition of fees to make the program at least partially self sustaining, addition of a dispensary and inauguration of a public relations program to gain citizen support.

Education Program

Since it was incumbent on police officers to investigate all dog bites, an orientation program was set up to help officers appreciate their responsibility. Similarly, every form of educational media was employed to educate the general public, such as leaflets and posters, speakers at luncheons, and a film on community rabies control.

In March, 1957, the St. Louis Health Division and the St. Louis County Health Department, in cooperation with the greater St. Louis Veterinary Medical Association sponsored a rabies control week in an attempt to utilize mass vaccination without the urgency of an epizootic. Only moderate success attended this effort.

Discussion

Although mass immunization has proved its effectiveness, there is every indication that compulsory annual vaccination can not be delegated to private organizations, despite the fact that the public is more rabies conscious during non-epizootic years.

Increased use of chick embryo rabies vaccine at three months of age has strengthened the biological barrier, and such an auxilliary tool may assume a key position in the eradication of urban rabies. In the St. Louis experience, rabies vaccination unfortunately has been linked with the traditionally unpopular dog license. Antagonized owners often fail to comply with the law.

Radiological Health Course At Oak Ridge

The Oak Ridge Institute of Nuclear Studies has announced that a special two-week course in veterinary radiological health will be conducted at Oak Ridge, Tennessee, March 10-21, 1958.

Conducted for the Atomic Energy Commission by the ORINS Special Training Division, the course will be presented with the cooperation of the University of Tennessee, Atomic Energy Commission Agricultural Research Program, and the Armed Forces Veterinary Corps.

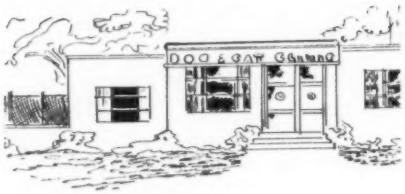
The course will provide indoctrination in radiological health and evaluation of radiation phenomena, particularly in relation to their biological effects and the possible or potential factors involved in the radiocontamination of food-producing animals or animal-food products. General areas of study will include radiation physics, radiation detection and detection instruments, autoradiography, radiation effects on the living cell, the radiation syndrome in domestic animals, the use of isotopes in research and medicine, internal irradiation effects, cytological and chemical effects of ionizing radiation on foods, radiocontamination of food, "decontamination" problems, evaluation of contamination problems, principles and practices in health physics, radiological defense, epidemiology of radiation disease, and A.E.C. policies and regulations.

Registration

A token registration fee of $25. will be charged each participant, except government employees, members of the Armed Forces, employees of contractors of the A.E.C. or who are sponsored by a government agency responsible for payment of registration fees.

Detailed course information and application blanks may be obtained from the course director, Major Max Nold, U. S. Air Force Veterinary Corps, ORINS Special Training Division, P. O. Box 117, Oak Ridge, Tennessee.

CLINIC



CLIFFORD L. McGINNIS, D.V.M.

Peoria, Illinois

THE popularity of Boxers has increased the demand for ear trimming. I am not an authority on ear trimming. There are men in the profession who trim more ears than I and do it more expertly. The accompanying photograph illustrates an idea we have developed to hold the ear erect until the healing process is complete. We use a strip of yucca wood about ½ in wide and glue it to the lateral edge of the ear, allowing it to extend downward on the side of the face. We wrap the wood with a strip of adhesive tape to prevent breakage, then apply duo-adhesive to the wood strip and the surface of the ear. Allow adhesive to partially dry on both the wood and the ear. When it gets tacky, stick them together. Almost always, this will adhere for seven days at which time we remove the sutures and the splint.

Yucca splints taped for strength are applied with duo-adhesive to the ear surface.

Canine Distemper

Here is a report of results on 100 consecutive cases of canine distemper. This includes all dogs that were presented and diagnosed clinically as distemper: Recovered — 65; died — 40; unaccounted for (owner moved or we were unable to contact) —5.

Of those that recovered only two had a previous history of immunization. Each had received one dose of killed tissue vaccine. Distemper-hepatitis antiserum was administered to seven patients at the time they were presented for treatment. Tissue vaccine was given to seven others, and Fromm's distemperoid vaccine was given to 17. Antibiotics only were administered to 24 others.

Of those that succumbed, 36 died from central nerve involvment. A breakdown of the 36 fatalities indicates that 23 died or were destroyed in convulsions; 13 developed either chorea or generalized incoordination and euthanasia was performed. Two of the 36 had received one dose of tissue vaccine, 14 days prior to admission.

Four died from other causes. One had developed pneumonia and died the second day after admission. One was weak when presented and died the same day. Euthanasia was performed on two because of unfavorable prognosis and at the request of the owners.

On analysis mortality was higher than I had anticipated. Our experience in treating the average run of early to advanced cases of canine distemper is hardly a proud one. We need both better owner cooperation and a better treatment agent. Perhaps new viricidal agents reported to be in a developmental stage will prove useful in treating canine distemper.

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(Continued from page 28)

Control of Parasites

In the past many drugs, chemicals, mechanical means, and quack remedies failed dramatically to either kill the flies or keep them away from cattle.

The more successful methods have been used on the basis that the vulnerable time in the warble flies' life cycle was the period when larvae materialized in the back and had cut holes in the hide. At this stage rotenone powders have been successfully employed to destroy grubs by contact. Unfortunately the damage to the livestock grower, the packer, and the tanner have been done at this stage, and results can be calculated only in terms of the reduced fly population.

During the last decade a great deal of attention has been directed to oral or subcutaneous administration of insecticides to destroy larval stages in the body. Although some have been modestly successful, almost all failed to kill the larvae in the tissue and therefore represented no improvement over rotenone. External insecticides have never been practical.

Phenothiazine initially showed promise in systemic control of cattle grubs, but more comprehensive research indicated that it was inadequate.

Systemic Insecticides

Several systemic insecticides have, however, experimentally killed larvae migrating through the body. Dow ET-57, a phosphate compound, administered orally is absorbed from the digestive tract and destroys larval stages in muscles and tissues before they reach the back. No animal toxicity or change in meat flavor attended these experiments. Dow ET-57 (trolene) is now available in the United States and Canada in bolus form.

Bayer 21/199, another phosphorous compound, unlike ET-57, is effective when used as a spray. It is absorbed through the animal's skin and acts as a systemic to destroy larvae before they reach the back. Another organic phosphorus compound, CL 12880 (American Cyanamid) has shown gratifying experimental results.

Recommendations

Much research remains to be done on eradication of other ectoparasites by systemic insecticides and other means. Lice, ticks, mites, fleas, and numerous flies, especially the tabanids (horse flies) still loom as formidable problems. Studies should be made on exotic parasitic infections to point up the dangers should these exotic species gain a foothold on the American continent. Also, interstate shipment of parasitized animals should be scrutizined, since newly introduced parasites in free areas cause enormous damage before control can be effected.

ADVISORY COMMITTEE TO THE AGRICULTURE RESEARCH SERVICE

Notes of a report by J. G. Milligan, D.V.M., Alabama State Veterinarian, Montgomery, Alabama, Chairman.

In a series of meetings with the Agricultural Research Service during the past year, all phases of regulatory and research programs were discussed with appropriate officials. One new major program inaugurated during the year was that of eradication of the screw worm fly in cooperation with the state of Florida.

Consideration has been accorded tuberculosis eradication, with findings that some changes are indicated in nomenclature. "No gross lesions" should be substituted for "no visible lesions." Tracing animals with tuberculosis lesions to farms of origin continues to remain the most important problem.

Serious shortage of trained personnel is anticipated when the new laboratory is opened at Ames, Iowa, and therefore funds should be made available to hire and train new personnel at state-owned institutions for ultimae use at the new laboratory.

An increase in budget for the meat inspection program is necessary if expanded services are to continue at the high level now expected by the public. Increasing number of plants requesting meat inspection tend to spread out present personnel to the breaking point. Meat inspection is now in effect in 471 towns or cities, with an addi-

tional 100 plants requesting federal inspection. Continued demand without adequate supply of trained personnel can lead only to substandard maintenance of existing regulations.

Other recommendations for budget appropriations are as follows:

1. Brucellosis eradication — $4,150,000. (Also the transfer of $20,000,000. per year for the 1959-60 fiscal year from the Commodity Credit Corporation should be continued.)

2. Diseases of swine eradication—$1,000,000.

3. Miscellaneous diseases, control and eradication — $750,000.

4. Vesicular exanthema — Transfer of $240,000. from the Commodity Credit Corporation for work in eradication of this disease until a branch for eradication of swine diseases has been established.

5. Land grant colleges—$300,000. for use of facilities.

TABLE 1. Reported Cases of Rabies in the United States (USDA)

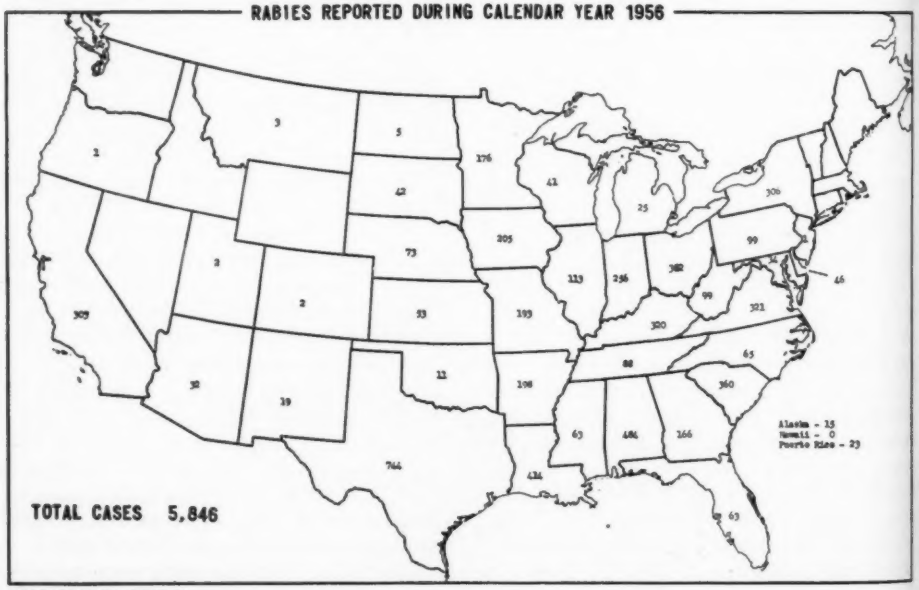
Year	Dogs	Wild-life	Cats	Live-stock	Man	Total
1946	8,348	956	455	1,055	22	10,872
1955	2,657	1,915	343	924	5	5,844

COMMITTEE ON RABIES

Notes of a report by Vernon D. Chadwick, D.V.M., *Jackson, Mississippi, Chairman.*

Almost without exception, present veterinary public health programs within state health departments have been inaugurated and developed during the past decade. Rabies control has been the principal zoonoses activity of most of these programs. Similarly, the Communicable Disease Center program of rabies research, technical consultation, and training was also developed during that same ten-year period. Progress achieved as a result of these programs is illustrated in table 1.

During 1956, the number of human rabies deaths jumped to nine cases, (four more than in 1955) almost half of those occurring in Dallas, Texas. Vaccine treatment was not given in seven of the cases, and incomplete therapy was administered in two cases. In that same year, cases of rabies in animals declined by 729 cases under the 5,853 reported in 1955. Although fairly uniform throughout the country, rather marked declines were evident in California, North



Carolina, New York, and Georgia. A substantial rise in incidence occurred in Louisiana, with a smaller increase in Indiana and South Carolina. Approximately 150 isolations from 14 species of insectivorous bats constituted the bat rabies from 1953 to the end of 1956.

Rabies morbidity trends during the first six months of 1957 declined to a total of 2,550, or 272 cases under the 2,822 reported for the same period in 1956. Compared with the same six-month period of a five year median average during 1952 to 1956, this represents a decline of 1,532.

WHO Rabies Report

Among other dramatic items in the 1957 WHO Expert Committee on Rabies Report (Technical report Series no. 121), which contains a guide for specific human postexposure treatment, newer evidence is presented to illustrate the efficacy of local infiltration of hyperimmune serum beneath the bite wound. Also contained in this publication is a section on pre-exposure prophylactic vaccination of high risk occupational groups such as veterinarians, laboratory workers, et cetera. Recommendations for immunization of animals are strengthened by field corroboration of earlier laboratory experiments. The report can be ordered from Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.

Routes of Administration

In an experiment on comparative routes of administration of chick embryo rabies vaccine (reported by Johnston, *et al., Jour. Am. Vet. Med. Assn.*, 130:2, 1957) five-month-old pups vaccinated intramuscularly resisted infection nine months after vaccination with a challenge dose that killed nine out of 11 (82%) of the nonvaccinated controls. Six of 17 (35%) vaccinated subcutaneously resisted infection 4¾ mo. after vaccination with a challenge dose that killed all three nonvaccinated controls. This study points up the importance of intramuscular inoculation of dogs with chick embryo live virus rabies vaccines.

Recommendations

An intensified campaign against the disease in the canine vector, and added study of the epidemiology in sylvatic vectors is recommended along with consolidation of present efforts with eventual eradication in mind.

PUBLIC HEALTH

Notes from a report by A. L. Brueckner, V.M.D., *Baltimore, Maryland, Chairman*

A far reaching step for the betterment of the public health was taken during the past year when Congress enacted legislation requiring mandatory inspection of poultry and poultry products. The legislation embodied standards of sanitation for buildings, equipment, and processes as well as bird by bird postmotem inspection.

Psittacosis-Ornithosis

Reported cases of psittacosis-ornithosis during the first half of 1957 were less than a similar period a year before. An epizootic in Vancouver, British Columbia is now under investigation, and is probably resulting from an epizootic in Oregon during 1957. Otherwise, sporadic cases have resulted from contact with psittacine birds. Antibiotic therapy early in the course of the disease reduces its severity in human cases.

Control of this disease in avian species has been attempted through the use of antibiotic impregnated feed prepared under laboratory conditions. Commercial attempts to produce quantities of antibiotic treated bird feed have been unsatisfactory. Similar efforts at treating turkey flocks has proved less successful than results in psittacine birds.

Bovine Tuberculosis

Severe outbreaks of bovine tuberculosis in herds previously free of this disease have caused deep concern among livestock pro-

ducers. In a report issued jointly by the Livestock Disease Control Division, Michigan Department of Agriculture, and the USDA, it was estimated that the Michigan program had slid back to the level of infection existing in 1929. The Committee on Public Health believes that further complacency can be disastrous and that dairy herds in areas where infection rates exceed the national level be tested annually.

Leptospirosis in Domestic Animals

There has been an increase in reported human cases of leptospirosis in the United States. During the 43 years between 1905 and 1948, only 306 cases were reported. By way of contrast, a total of 392 cases were detected and reported in the four year period from 1953 to 1956. Over one-third of these cases were the result of contact with infected swine and cattle. York reported in 1951 that leptospirosis had occurred in 12 states. Available information indicates that the disease was evident in 42 states in 1956. Agricultural Research Service estimated that animal losses from bovine leptospirosis in 1954 was over $112,000,000.

Veterinary and medical laboratories should be cautioned to be on the alert for infection in domestic animals and man, with attention not only to *L. pomona, L. canicola,* and *L. icterohemorrhagiae,* but to all other serotypes as well. Leptospiral serotypes unrecognized before in the United States are now appearing in raccoons, opossums, and skunks in southwest Georgia, namely *L. australia A,* two serotypes of the hyos serogroup, *L. grippotyphosa,* and a member of the hebdomadis serogroup. The racoon has been recognized as the first animal host of *L. autumnalis* in this country.

Tularemia

Insect vectors and direct human contact with diseased animals account for tularemia in man in some western states. Close liasion between livestock sanitary officials, health officials, veterinarians, and physicians can most effectively combat this situation.

The Rabies Problem

Control activity coordinated between the various agencies for public health can best maintain control of the rabies problem. This coordination is the concern of all involved.

BIOLOGICS AND PHARMACEUTICALS

Notes of a report by S. F. Schiedy, D.V.M., *Philadelphia, Pennsylvania, Chairman.*

Development and improvement of biological, pharmaceutical, and diagnostic agents have underwritten great strides in increasing livestock production and feed efficiency, and controlling animal diseases. Improved culture technics have made possible development of new prophylactic agents for use in animals.

Infectious Bovine Rhinotracheitis Vaccine

During the past year an infectious bovine rhinotracheitis vaccine produced by tissue culture technics from modified live virus has been developed for intramuscular administration. Although extensive clinical data are not available, reports indicate that the vaccine is safe, that virus will not spread from vaccinated to nonvaccinated animals, that neutralizing antibodies are developed by vaccinated animals, and that vaccinated animals are resistant to challenge with virulent virus and protected against field exposure.

Infectious Canine Hepatitis Vaccine

Infectious canine hepatitis vaccine of modified virulence produced by tissue culture technic has met with considerable interest during the past year. Combined with modified distemper virus prepared from chick embryo, this product is available as a dual vaccine. Also available is a killed canine hepatitis virus of tissue culture origin.

Hog Cholera Antibody Concentrate

Hog cholera antibody concentrate designates a new biologic consisting of hog cholera antibodies concentrated from serum by fractionation. Production of serum used in fractionation is controlled by regulations applicable to production of regular hog cholera antiserum.

Clostridium Perfringens Antitoxin

Valuable if used early in treating an infection, *Clostridium perfringens* antitoxin, types B, C, and D, are now available as a combination. It is prepared from animals hyperimmunized with the major toxins of *C. perfringens.*

Cattle, swine, horses, and sheep can be adequately protected against leptospirosis by *L. pomona* bacterin. Bacterins containing *L. canicola* and *L. icterohemorrhagiae* are also available.

Anthrax Vaccine

Favorable reports attending widespread use of avirulent (Sterne type) anthrax vaccine in the recent Oklahoma and Kansas outbreak of anthrax confirm the 1956 report on the use of this vaccine.

Avian Pleuropneumonia-like Organism (PPLO) Infection

Restricted to use primarily by research laboratories studying PPLO or air sac disease, this antigen is used in serologic agglutination tests to identify birds harboring the PPLO infection. During the past year, intramuscular or intraperitoneal administration of streptomycin or dihydrostreptomycin (or a mixture of the two) to laying flocks seemingly increased egg production, improved hatchability, and reduced morbidity in chicks hatched from eggs of treated birds.

Lungworm Infections

Cyanacethydrazide, given subcutaneously or orally, has been demonstrated by British workers to eliminate larvae and worms from the bronchioles, bronchi, and trachea in cattle, sheep and swine. Although worms are not killed, the drug narcotizes them and permits their expulsion.

Hygromycin

Hygromycin is an effective anthelmintic with prophylactic and therapeutic action against ascaris, strongylus, and trichuris infections in swine. Broth from the cultured organism, including the mycelium, can be added to a carrier substance as a premix to swine feed.

Penicillin G in Cattle Bloat

Recent reports indicate that antibiotic substances administered or fed orally are effective in reducing bloat in cattle maintained on certain legume pastures. Procaine and potassium salts of penicillin G mitigate incidence of bloat in cattle on ladino clover.

Iron Therapy

Hypochromic anemia occurs frequently in young pigs. Various oral dosage forms of iron have been used, and recently an injectable iron-dextran complex became available for intramuscular administration.

Dow ET-57

This is an organic compound that has proved effective in control of migrating larvae of cattle grubs when administered orally. Evidence exists, however, that the compound may be stored in fat tissue in treated animals. It should not be administered within 60 days of slaughter, and under no circumstances to dairy cows.

Standards for Veterinary Biologics

Results of recommendations on minimum temporary requirements for production of ovine ecthyma vaccine, wart vaccine, encephalomyelitis vaccine, feline distemper vaccine, canine distemper vaccine, infectious canine hepatitis vaccine, rabies vaccine, and hog cholera vaccine have been encouraging, and compliance with these standards a reality. More recently, an effort to effect uniform method of inspecting all veterinary biologics has been given direction by work conferences in several cities.

A questionnaire returned by 148 Pennsylvania practitioners suggests the interest and concern of veterinarians in mastitis control. This analytical study reveals that veterinarians do not agree entirely with attempts to place bovine mastitis within a limited concept of definition or primary cause.

Survey Of Pennsylvania Veterinarians On Mastitis And The Antibiotics Problem

S. B. GUSS, V.M.D.

Extension Veterinarian
Pennsylvania State University
University Park, Pennsylvania

RECENT surveys by the U. S. Food and Drug Administration have revealed increasingly larger amounts of penicillin in samples of market milk collected throughout the nation.

Agricultural extension and other educational agencies have been asked to conduct an educational campaign aimed at the elimination of antibiotic adulterants in market milk.

Nature of the Disease

In an effort to discover how the general veterinary practitioner views mastitis and the antibiotics-in-milk problem, a questionnaire was sent to 528 Pennsylvania veterinarians in June 1957. One hundred and forty-eight (28%) of the practitioners returned completed questionnaires. It was hoped that Pennsylvania State University veterinary and dairy science extension personnel would be able to learn from the men in close contact with the situation their concept of the problem and their suggestions as to what needs to be considered in formulating an educational program.

Two definitions were offered for their approval: 4% chose the definition that mastitis is an infectious disease caused by organisms not found in normal animals with effective control demanding isolation and treatment or elimination of carrier animals; 20% chose the definition that mastitis is a disease which results when certain stresses overcome resistance to udder infection with certain management practices having greater influence on the control of this disease than any laboratory control program; and 69% said that neither definition was quite adequate in itself, and that all or parts of both explanations must be included.

Antibiotics and Incidence of Disease

Tabulation of questionnaires indicates that practitioners hold opinions as follows:

Mastitis is more difficult to handle where antibiotics have been used promiscuously—91%.

Antibiotics used promiscuously lose their therapeutic value—98%.

Incidence of the disease had not decreased in the past ten years in spite of the use of antibiotic treatment—71%

Udder irritation from antibiotic infusions may be more severe than the original mastitis infection for which they were used—61%.

Farmers do not withhold milk from antibiotic treated quarters for a sufficient time following treatment—77%.

Effective Treatment for Mastitis Cases

Other questions in the survey yielded the following opinions on effective treatment:

Only the udders of dry cows which had previous mastitis history should be treated —99%.

Bacterins can be used effectively for control of the disease—31%.

In treating mastitis cases for which farmers have used all available udder infusions, the majority (68%) discontinued any further treatment by infusions. Systemic treatment using sulfonamides and broad-spectrum antibiotics was preferred by these men. Many mentioned the value of frequent milking, massage, and corrected management. A significant number (20%) used bacterins for these cases. A few indicated that they resorted to intramammary infusions with antibiotics not available to the farmer or higher potency doses of the same antibiotic used by the farmer. Nearly 20% of them recommended slaughter if the mastitis case was chronic. Less than 10% indicated that they would isolate the animal; 13% recommended reduced protein intake.

Sanitation

Answers to questions on the value of udder and teat cup sanitation for mastitis control are tabulated as follows:

100% recommended milking infected cows last.

79% recommended individual cow towels immersed in warm disinfectant for milking preparation.

78% recommended that milkers wash and disinfect their hands after milking infected animals.

77% recommended that teat cups be disinfected between cows.

18% recommended dipping teat ends in alcohol following milking.

Mastitis Control

The following observations on what Extension should teach about mastitis control were made by the questioned group.

103 said "teach better milking technic."

73 said "teach barn sanitation."

67 said "teach cow comfort."

53 said "teach careful feeding."

40 said "teach them to use the strip cup."

40 said "teach udder and teat cup disinfection."

29 said "stress value of professional services."

26 said "emphasize elimination of carrier animals."

21 said "isolation of suspicious animals."

17 said "encourage pen stabling."

17 said "teach them to breed better cows."

1 said "teach the value of surveying herds for *Streptococcus agalctiae*."

Laboratory Assistance

Observations on the value of laboratory assistance were as follows:

Setting up a state-sponsored survey and treatment program (similar to the New York or Connecticut programs), was favored by 32%.

Bacterial identification and antibiotic sensitivity testing at the existing regional diagnostic laboratories was favored by 52%.

Individual practitioner's mastitis laboratories were favored by 17%.

The Mastitis-Antibiotic Problem

Commenting on the presence of antibiotics in milk, the great majority of veterinarians stated that failure to restrict antibiotics to professional use was behind the whole problem. Many practitioners suggested that farmers should be taught something about the limitations of antibiotics.

The following suggestions were mentioned more than a few times:

Udder infusions should be colored.

Dairy plants should test for presence of antibiotics.

Value of professional services should be emphasized.

Basic research on mastitis is urgently needed.

Some laboratory service should be provided for veterinarians.

Dairymen should be told that they have been the victims of advertisers.

Evaluation of the Survey

The fact that 148 out of 528 practitioners completed this rather long (17 questions) questionnaire indicates their concern about the antibiotics-in-milk problem and their interest in control of mastitis. Many practitioners volunteered valuable clinical data and comments which reveal an interest in the problem of extension education.

It is evident that Pennsylvania veterinarians can not agree entirely with either of the two definitions which attempt to place mastitis within a limited concept. Answers emphasizing udder and teat-cup sanitation, segregation of mastitis cases, and elimination of chronic cases would at first seem incompatible with the belief that better milking, cow comfort, selective breeding, and careful feeding are of utmost importance in prevention of the disease. Veterinarians, because of their training and everyday contact with disease, are reluctant to minimize the value of basic sanitation. On the other hand, this survey reveals that mastitis can not be eradicated using laboratory testing programs which have been successfully employed against other diseases. They agree that management practices have greater influence on the disease than identification of cows carrying certain organisms in their udders. They indicate that laboratory services for bacterial identification and antibiotic sensitivity testing would improve therapy in problem herds.

Although Pennsylvania veterinarians agree that antibiotics are valuable for therapy, they see no reduction in incidence of the disease as a result of continued use. The great majority expressed concern about the antibiotic-resistant organisms in udders and herds where antibiotic udder infusions are freely used by the dairyman. It is interesting to note that they believe antibiotics lose their therapeutic value when they are used promiscuously.

Recommendations for therapy for stubborn cases lean toward systemic use of sulfonamides and broad-spectrum antibiotics. At least a half dozen revealed that they no longer use udder infusions of any kind. A reversal of treatment trend can be seen in a return to earlier treatments such as frequent milking, cutting down feed, massage, and the use of mixed bacterins to increase resistance.

Questioned veterinarians agree that educational efforts should be directed to better milking in spite of the fact that we have been hammering at this subject for years. They suggest added emphasis on barn, teat cup, and udder sanitation. They unanimously believe that milking of infected animals should be done last, and that the elimination of chronic cases is imperative. This would indicate that even though they believe that proper milking is of primary importance, they consider known affected animals to be a menace to other normal animals in the herd.

The general consensus is that "over the counter" sales of antibiotic preparations have been the greatest contributing factor in bringing about the present antibiotics-in-milk problem. Many veterinarians regret that farmers have been encouraged by advertisers to rely on "over the counter antibiotics" to solve their mastitis and other disease problems, rather than through the counsel and services of the veterinarian.

Poor Management Encouraged?

Dr. O. Burr Ross, speaking as a fellow panel member, declared that "Poor management is often encouraged because additives

pression that he doesn't need to be careful with management anymore."

Modern livestock producers are more nutrition conscious than ever before. The matter is a major factor in maintenance of herd health and therefore requires the careful consideration of the attending veterinarians.

FUNGUS MASTITIS: A CASE REPORT

PAUL JUNGERMAN, D.V.M.

Department of Veterinary Microbiology
College of Veterinary Medicine, Texas A. and M.
College Station, Texas

IN MARCH OF 1957, a mastitis problem herd was referred to the Texas A. and M. Department of Microbiology by the state extension veterinarian. The owner reported that he had been forced to sell several cows because of incurable mastitis and had incurred a severe financial loss during the past several months. The udder infection and inflammatory process apparently became more severe following treatment with antibiotics and led us to suspect a fungus.

At the time of the original investigation only one cow was affected in only one quarter. Material collected was streaked onto blood agar and Sabouraud dextrose agar plates, and a pure culture of what was suspected to be *Nocardia asteroides* was obtained. This was confirmed by Ajello and associates at the Communicable Disease Center, Mycology Branch, U. S. Public Health Service, Atlanta, Ga.

Nocardiosis of the Udder

Previous reports of nocardiosis of the bovine udder are rare. Sporza[1] has reported the production of mastitis by *N. asteroides* from Italy. Munch-Peterson[2] has isolated the organism from a case of mastitis in Australia. He reproduced the disease in an experimental cow. No reports of the organism as an etiologic agent of bovine mastitis in the United States could be found in the literature; however, in a personal communication, Roberts[3] states he has recently made such an isolation.

The possibility of our isolate being a soil contaminant was considered. Cases of human infection have been reported as occurring in people working or living in contact with the soil.[4] Approximately three weeks after the first isolation, milk samples were again taken, and the same quarter again yielded a pure culture of *N. asteroides*. The milk from the affected quarter was watery and contained yellowish and whitish flakes and clots. The infection had been present for approximately six months, and the quarter had progressively filled with scar tissue until about three-fourths of the gland was involved. The other three quarters were normal, bacteriologically negative, and the cow apparently was in good health.

An inspection of the milking, feeding, and general management practices employed in the dairy operation was made. Several changes were suggested, and the incidence of mastitis in the herd declined. The infected cow remained in the herd but was placed last in the milking line.

Sixty days after the study was started, milk from all quarters of the cows in the herd was cultured. The udders were thoroughly cleaned with soap and water, carefully dried, and the teats and orifices swabbed with alcohol. Screwcap vials were used and were refrigerated immediately following the collection. No new cases of infection had developed, but a pure culture of Nocardia was again obtained from the same quarter of the cow that was originally infected. Five weeks later the same quarter for the fourth time gave a pure culture isolation.

It is unfortunate that we did not have the opportunity to obtain cultures from some of the cows that had been previously sold to slaughter because they did not respond to antibiotic treatment. The owner stated that all followed a course similar to that of the cow from which the fungus was isolated. It is possible that they may have been infected with Nocardia, but this is speculative. A number of reports indicate that mycotic infections have a tendency to become established following antibiotic therapy.[5,6,7] This report indicates that antibiotic therapy might allow mycotic infections to become established in the bovine udder.

Report submitted for publication Sept. 10, 1957.

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Promazine in the Treatment of Tetanus in a Shetland Mare: A Case Report

BEN SHAMBAUGH, JR., D.V.M.

Longmont, Colorado

DURING A ROUTINE check in the first week of April 1957, I discovered a Shetland mare, away from the band and not feeding. Symptoms of tetanus were clearly visible, including rigid ears and the "pathognomonic" saw-horse stance, spasmodic action of the third eyelid and the cutaneous muscles. The mare exhibited evidence of suffering from muscular spasms and was led, with difficulty, to a box stall.

Because of a limited stock of drugs on hand at that time, I was only able to administer 12,000,000 units of outdated penicillin. A colleague, however, provided me with a vial of promazine (sparine®, Wyeth), 50 mg. per cc., and the requested antibiotics and antitoxin to treat the mare adequately.

The mare was given 350 mg. of promazine intramuscularly for muscular relaxtion and quiescence. At the same time 30,000 units of tetanus antitoxin and 12,000,000 units of current date penicillin with 2.5 gm. dihydrostreptomycin were administered. In former cases while in practice, intravenous sedatives and anesthetics had been used for initial control of spasms, followed by oral administration of potassium bromide for the maintenance of relaxation. Too often these drugs proved inadequate and short lived relaxation.

All feed and debris were removed from the mare's mouth. All hay and bedding were removed from the stall. Only a small amount of ground oats and a pail of fresh water were left available.

Twenty-four hours later the same dose of antibiotics was administered. The mare had been eating and drinking, and her legs were completely relaxed, to the extent that balance was obviously unstable. It was not considered necessary to repeat the promazine injection.

Positive improvement was noted each succeeding day. On the fifth day the mare was turned to a small lot for exercise and observation.

The following evening it was discovered that the mare had aborted a foal. Placenta and membranes were intact, and there was no evidence of placental or fetal infection. Loss of the foal was probably due to rigidity and excessive spasms of the uterus during which the placenta of the fetus was detached. Normal birth should have occurred "within three weeks". Recovery from both experiences was thereafter rapid and uneventful. The mare is in foal again and is apparently normal.

Prior to the tetanus infection and the abortion the mare had apparent perfect vision and was entirely gentle for any child. Disposition is unchanged but it appears at times sight has been impaired, either by loss of vision or adaptation, or inability to distinguish familiar objects. The mare shys occasionally at things of which she previously had no fear or doubt. Examination of both eyes reveals no apparent evidence of damage.

It is believed that promazine effected such relaxation of muscles under tetanic spasms that exhaustion, suffocation, and collapse, were prevented and thus treatment facilitated with antibiotics and antitoxin.

A Comparison of Glucose and Prednisolone for Treating Ketosis

W. G. HUBER, D.V.M.

Cissna Park, Illinois

IN 1955-56 prednisolone* was used in treatment of ketotic cows with good results; milk production returning to normal in four to five days.[1] In a few cases milk production after treatment exceeded that proir to ketosis. All of the cases treated for uncomplicated ketosis responded with one treatment, and we were well satisfied with this response. Complicated cases such as ketosis associated with displaced abomasum or traumatic gastritis, reponded only after correction of the primary disorder.

Despite the high degree of success achieved with prednisolone, it was decided for comparison purposes to treat five cows that had ketosis in the winter of 1955-56 with 500 cc. of 50% glucose during the winter of 1956-57, if and when they again became affected. All five cases had been treated with prednisolone in the previous lactation. The diag-

*Supplied as Sterane® by Dr. E. M. Sacchi, Chas. Pfizer & Co., Inc., Terre Haute, Indiana.

TABLE 1. Comparison of 50% Glucose (Intravenously) with Prednisolone (Intramuscularly) in Treatment of Bovine Ketosis

Case	Treated 1955-56	Response	Treated 1956-57	Response
Guernsey BK	100 mg. I.M. prednisolone	Normal lactation & recovery in 3 to 5 days.	(A) 500 cc. 50% glucose I.V.; chloral bromide 1½ oz./os.	24-hr. lift; improved appetite, but milk production not improved, nervous symptoms returned at 48 hr.
			(B) 100 mg. prednisolone I.M. approx. 72 hr. after glucose.	Improved a little each day until 4th day when appetite and milk production were normal.
Holstein ES	100 mg. I.M. prednisolone	Normal lactation & recovery in 3 to 5 days.	(A) 500 cc. 50% glucose I.V.	No improvement noted in 48 hr. Ate some hay but no grain. Milk production improved for 1 milking and then regressed.
			(B) 100 mg. prednisolone I.M. approx. 48 hr. after glucose.	Slight improvement in appetite and milk production, but another 50 mg. of prednisolone was administered at 96 hr. after the glucose was given to complete the therapy and return the animal to normal.
Guernsey LB	50 mg. I.M. prednisolone	Normal lactation & recovery in 3 to 5 days.	(A) 500 cc. 50% glucose I.V.	Improvement for 4 days then relapsed; sweet odoriferous milk, loss of appetite and drop in milk production.
			(B) 100 mg. prednisolone I.M. 5 days after glucose.	Returned to normal at 4 days and has milked better than before onset of ketosis.
Holstein HH	100 mg. I.M. prednisolone	Normal lactation & recovery in 3 to 5 days.	(A) 500 cc. 50% glucose I.V.	No apparent response except ate a little more roughage.
			(B) 100 mg. prednisolone I.M. 24 hr. after glucose.	24 hr. after treatment showed slight improvement but not enough to assure a safe and rapid recovery. An additional 100 mg. was given 24 hr. later or 48 hr. after glucose therapy. The animal then continued to improve in appetite and the blood serum D-S reaction too, until on the 4th day after the last steroid treatment she was back to her normal milk production level.
Holstein BK	100 mg. I.M. prednisolone	Normal lactation & recovery in 3 to 5 days.	(A) 500 cc. 50% glucose I.V.	Appeared to recover for 6 days. On 7th day was off feed with a marked drop in milk production. D-S reaction positive.
			(B) 100 mg. prednisolone I.M. 7 days after glucose.	Improved steadily until 3rd day, when she apparently recovered as shown by a negative D-S reaction, normal appetite and normal level of milk production.

nosis in both years was based on symptoms and a positive Dumm-Shipley reaction on blood serum.

Responses to the two methods of treatment are given in table I. Under "A" are given results of treatment with glucose alone and under "B" results of a follow-up treatment with prednisolone which was found necessary.

Observations and Conclusions

1. Treatment with glucose in these cases did not correct the ketosis. It was necessary to use prednisolone as a follow-up treatment.

2. The follow-up treatment for the ketosis relapse necessitated in two cases larger amounts of prednisolone than had been previously used in these same animals.

3. It was found to be more economically feasible to use prednisolone on the first visit to treat the affected animal even though it was more expensive than glucose. Return calls meant added treatment cost.

4. In all cases of ketosis treated with prednisolone in my practice, milk production did not return to normal until after three to five days post-treatment. When the milk production did return it stayed at the normal level or in some cases increased. It is a wise practice to inform clients not to expect an overnight restoration of milk production but that it takes at least 48 hours for lactating cones to return to normal. Often a rapid improvement in appetite and general appearance is noted at 24 hours, concurrent with a decrease in the Dumm-Shipley reaction on the blood serum.

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Test Your Tax I.Q.

Test your knowledge of the federal income tax law on this quiz prepared by the American Institute of Certified Public Accountants in cooperation with the Internal Revenue Service.

Q. During the past year you spent approximately $1,000. for built-in bookcases and wall-to-wall carpeting for your office. Since your lease has only four years to run, how can the cost of improvements be depreciated.

A. On leased property, you normally spread the cost of improvements over the shorter period — the life of the improvement or the term of the lease. Since your lease expires in four years and presumably the furnishings will have a longer life than that, you should be able to claim a $250. deduction on your federal tax for this year and the next three years.

Q. When you were transferred to another city, your company gave you a sum of money toward the cost of moving you and your family. For tax purposes how should you consider this money.

A. The money you received from the company must be reported as income, but you may deduct the cost of moving your entire family. If the amount the company gives you exceeds your expenses, the excess is taxable. Conversely, however, if your expenses were more than the amount received, the difference is not deductible.

Q. You have invested in several blue chip stocks. The dividends received from this investment are exempt up to what amount?

A. All taxpayers are entitled to a $50. dividend exemption. A husband and wife can combine their exemptions and receive $100. in dividends tax free, providing the stock is jointly owned. The filing of a joint return will not qualify them for this double exemption if the stock is held in only one of their names.

Q. On the advice of a friend, you engage a C.P.A. to prepare your 1957 tax return. Is the fee he charges for this service deductible.

A. The fee which a C.P.A. charges you to prepare a tax form or defend the accuracy of your return before the Treasury Department is deductible in full if you itemize deductions.

Editorial

REVIEW OF PROGRESS IN VETERINARY MEDICINE

It is a delightful experience at this time each year to cite briefly some important progress made during the year past. The sum of the new knowledge gained is thus added to the total and some degree of pride may be taken in its accomplishment.

Progress in veterinary medicine must be measured in its benefits to the livestock industry, and to the pet owner, and thus to the general public health and wealth of the nation. No nation can be strong without the alert attention of those responsible for the health of its people. Veterinarians have been challenged with increasing responsibilities. They include (1) prevention of livestock diseases to limit losses of profits to growers and meat for consumers, (2) maintainance of the health of pets that contribute to the health and well being of a large family of owners, (3) direct contributions towards public health by control of diseases transmissible from animals to man, (4) inspection duties to assure wholesomeness in meat food products, and (5) continuation of studies toward perfection of technics that will serve more effectively.

Today's Crisis

There is a radical character of crisis in today's world. Like others, veterinarians have considered the struggle of ideologies. They can take substance and pride in the assurance that veterinary medicine is one of the few branches of science in which knowledge can be increased and applied without danger of doing more harm than good. Favorable results of individual effort add to the overall accomplishment of the profession when subjected to an annual audit. Veterinarians can take justifiable pride in results of their own efforts and a share of accomplishments of the united effort.

Changing Trends in Agriculture

Trends in agricultural economics that will affect the veterinarian and his practice become more and more apparent. Readers have been urged repeatedly in these pages to be alert to changes with attention to their possible effect in practice locations. Fewer farms and farm family, larger farm operations, concentration of all classes of livestock, and other trends with which practitioners are aware and becoming familiar have influence on business practices. Adjustment to these changing trends are inevitable and will require alertness, analysis, and adjustment with a view toward rendering the service expected and required and for which professionals are trained.

Disease Situation

Leptospirosis proved to be the most talked about livestock disease during 1957. The question concerning increased incidence or

ABOUT THE NEW COVER

In an effort to achieve artistic design embodying simple and pleasing modern lines, Artist Sears was instructed to emphasize the initials V-M, yet maintain the registered name of the journal in modest prominence.

For color — the traditional red that has characterized covers of VETERINARY MEDICINE during most of its 52 years has been combined with the academic gray of the veterinary profession.

We trust that the new cover appropriately distinguishes the contents of the journal that promises to reflect the new thinking of the profession.

adequate diagnosis has not been settled. Perhaps incidence is increasing; certainly practitioners are better able to make diagnosis. New knowledge and reports of detailed observation and experimentation have made this possible. Symptoms have been described more thoroughly, means of transmission have been made clear, suggesting preventive measures, and period that infected animals remain carriers capable of spreading the disease has been emphasized. In addition, prophylactic agent has been made available commercially, and epizootiological surveys have pointed out the importance of the disease as a limiting factor in successful livestock culture. Laboratory diagnosis has been facilitated by improved antigens and methods. Studies need to be pursued to cope with what appears to be a serious threat to cattle and swine as well as man. It is also a disease problem of considerable significance in dogs.

Progress on the major project of freeing the nation of bovine brucellosis has surpassed planned projection. Goal of modified accredited brucellosis free status for the entire country remains as first projected — 1960. Serious threats to the program are foreseen by some. There is danger that inadequate funds may so retard execution of the present procedure that infective foci might spread to wipe out gains thus far made. More emphasis has been placed on the public health significance of bovine brucellosis which may tend to gain support for the eradication project. Swine growers are being urged to join the voluntary swine brucellosis control effort which would tend to reduce infectious foci for both hogs and cattle.

There is now general agreement that nonvirulent or modified and thus attenuated hog cholera vaccines provide an adequate barrier against possible infection. The use of simultaneous virus is giving way gradually wherever swine are grown. Legislation prohibiting sale, distribution, and use of virulent virus has recognized a suitable safe substitute product, has forced the abandonment of the virulent product in some areas, and perhaps most important, its restriction has removed a major infection source in proportion to its voluntary or forced restriction. Hog cholera is an unnecessary disease burden on the swine industry. For practical purposes it can and will be eradicated.

The challenge of infectious bovine rhinotracheitis which plagued western cattle feedlots several years ago has been met through fruitful studies. The attack on the problem by veterinary scientists has confirmed the value of the methods employed. Many questions have yet to be answered. These pertain to reservoirs of infection, et cetera that might reveal appropriate action to prevent exposure or lessen infection sources.

Biologic and Drug Development

Major advances in manufacture of therapeutic agents include the new process of fractionation of hog cholera antiserum, new formulations of antibiotics with other chemicals and hormones for their synergistic action and as safety factors, development of several new biologic agents, confirmed value of selected hormone and enzyme products, and advances toward perfection of systemic insecticide, to mention only a few groups of drugs. Manufacturers are directing larger funds into product research than ever before. This in the face of facts that indicate wide use of products unkown a decade or two ago. More new items are certain to be made available by sincere efforts to place better tools in the hands of veterinarians.

Significance Of A Title

The professional status of the veterinarian has never been appreciated more than it is today. Yet, people generally take an uncritical view of it. There are those among us who find it irritating when otherwise intelligent persons are unfamilar with the word or just stumble over its spelling.

The word "veterinary," according to Smithcors (The Family Tree of the Veterinarian, VETERINARY MEDICINE, Vol. 50:525, Nov. 1955) is the English form of the Latin adjective *veterinus*. The earliest use of title "veterinarian" is not a matter of record, although known to have an ancient origin. But not every concept is either honorable or acceptable. All are subjected to the transforming touch of time. The changing concepts of veterinary practice, coupled with the technical and scientific progress of the past half century, have sometimes elevated concepts and words to express them to the dignity of permanence. The term "veterinarian" embodies such an idea and such a word.

During the early formative years of organized veterinary medicine in the United States, some effort was made to change the title of the profession's practitioners. In a report of the Committee on Intelligence and Education, Dr. Leonard Pearson, then chairman, suggested that the veterinarian "must be more of an expert on animal industry — an animal engineer." This appears in the Proceedings of the United States Veterinary Medical Association for 1898, edited by Dr. W. L. Williams. It was at this same meeting (1898) that Doctor Pearson stated, "You will have an opportunity at this meeting to vote upon a proposition to change the name of this Association from the United States Veterinary Medical Association to the American Veterinary Medical Association." The proposal was voted affirmatively and the change in name made at the 35th annual meeting held at Omaha, Nebraska.

In an address presented before the Veterinary College Alumni Association of New York University at Carnegie Laboratory, New York City in 1920, entitled The Animal Engineer, William Herbert Lowe stated "I would like to recommend to the University authorities the advisability of bestowing the degree of B.S. or M.S. in animal engineering upon veterinarians who especially distinguish themselves in the study and practical application of scientific principles to the problems of animal husbandry and animal industry." He also assured his listeners that "Economic considerations will always insure the employment of skillful practitioners . . ." It will be recalled that during this period some speakers voiced the sentiment that displacement of the horse by the automobile and auto truck meant the end of an ancient and nobel profession.

At approximately the same time (early 1920's) the term "animal engineer" was proposed by the late Dr. W. Horace Hoskins to supplant the designation "veterinarian". Considerable discussion followed. However, even though disease prevention measures had been receiving serious attention for a considerable period, and even before the turn of the century, the Hoskins' proposal was rejected.

Stilbestrol Additive For Sheep

Following submission of protocols of extensive tests, stilbestrol has been approved for feeder lambs. Increased gains and feed efficiency have been significant in at least a half dozen experiment stations.

Stilbestrol was first allowed as a feed additive for fattening cattle in 1954. Extensive use is now made of the synthetic hormone both as a feed additive and in the form of pellets for subcutaneous implant.

Recommended dosage to fattening sheep is 2 mg. daily per head. A premix containing known levels will be distributed only to feed manufacturers for additions to complete rations or protein supplements.

Nutrition

MORRIS ERDHEIM, D.V.M.

Although there are economic and political factors that are not germane to milo feeding, it must be observed that milo feeding for livestock is evident from coast to coast. What was once a fairly regional crop is now produced and available country-wide.

According to the latest figures, Kansas raised five times as much milo in 1957 as the year before. Even the Corn Belt states produced milo during the year, with the crop going into feeds.

To practicing veterinarians, this information is of more than academic interest. While this grain can be efficiently used as a replacement for corn, there are differences between the two grains. These can become evident in clinical conditions in the field.

A study of the two grains can help us anticipate and understand what might develop when milo is fed in place of corn. The following table makes the comparison:

TABLE 1

Content	Corn	Milo
Protein, %	9.	11.
Fat, %	4.0	2.5
Fiber, %	2.5	2.5
N.F.E., %	71.	70.
Productive energy, calories/lb.	1145.	1080.
Ash, %	1:3	2.0
Calcium, %	0.02	0.03
Phosphorus, %	.25	0.30
Riboflavin, mg./lb.	0.5	0.4
Pantothenic acid, mgs./lb.	2.2	5.0
Niacin, mg./lb.	10.0	13.0
Choline, mg./lb.	200.	200.
Vitamin A activity, USP Units/lb.	2,500.	

It is readily apparent that the two grains are fairly similar. Milo is somewhat higher in protein although neither grain is a good quality protein. Corn contributes somewhat more energy per pound. There are some differences, though, which must be considered whenever milo is used as a substitute for corn.

Physically, milo is smaller and is covered with a hard shell. The shell must be broken to make the grain available to the animal. This is accomplished by grinding before feeding.

Another significant difference is in the carotenoid content. Corn has carotenoids which have a favorable affect on pigmentation of broilers. Moreover, they contribute vitamin A activity which can be depended on to supply at least part of the animal's vitamin A needs. Milo does not contribute such carotenoids to the feed. This means milo will have to be supplemented with vitamin A.

Milo in Hog Feeds

Milo can be fed to hogs to good advantage. It is particularly important though that it be ground before feeding. Here too, the vitamin A intake must be considered. Additional vitamin A should be provided in the feed to supply the correct level.

Milo in Cattle Feeds

Many feedlots throughout the Midwest are fattening cattle on milo this year. This may be in combination with corn. Milo is palatable to cattle, although some of the other sorghum grains are not.

From a practical point of view, we must recognize that in many of our practices, we will be dealing with animals on feeding programs using milo. Many practitioners in the Corn Belt have diagnosed "subclinical vitamin A deficiency" in cattle getting corn. Apparently, some factors keep the animals from converting all the vitamin A activity in the corn to usuable vitamin A. With milo in the feeding picture, we can expect to see more of these borderline vitamin A deficiencies under practical field conditions. We might even see more frank avitaminosis A.

Alarm is not justified at the present. With a properly fortified supplement and good quality roughage, milo is an excellent source of energy. It can be utilized efficiently. However, it is important that we be mindful of its limitations, particularly as they may contribute to a clinical picture.

R. R. Dykstra, D.V.M.

Animal Health

Radiation Dangers Overemphasized

Radiation dangers appear to be uppermost in the public mind, possibly to a greater extent than the present situation warrants.

Tests of milk conducted by federal laboratories indicate in regard to strontium 90 for example, that fallout is small. If the present rate of fission of this substance is continued human exposure from consumption of such alleged contaminated milk is actually less total radiation than that received during a lifetime of exposure from a luminous watch dial. Strontium 90 is discussed in this presentation as it is potentially the most to be feared of all the radioactive substances dropped by fallout. Half-life of strontium 90 is 28 years. It has an exceedingly short radiation range so that minute quantities that may be deposited in bone tissue does not reach the marrow, and not anywhere near the organs of generation; the latter most frequently mentioned as a possible cause of genetic danger. Cattle are exposed to fallout from consuming radio contaminated vegetation so that it reaches the milk, and thus the bones of the consumers where it remains indefinitely.

It is also well to remember that all human beings have a small amount of radiant potassium in their bodies put there by nature by thousands of years of exposure to cosmic rays. It is estimated to be 15 roentgens (r) of total body irradiation during a lifetime, and the Atomic Energy Commission estimates that each person has received an average of 0.1 roentgen from all nuclear detonations up to the present time.

Impact of Contributions By Illustrious Veterinarians

We were asked some time ago by a colleague to give our opinion about three fundamental veterinary medical discoveries or developments that have had the greatest impact on the field of medicine and surgery as a whole — both human and animal. Off-hand we listed the following:

1. The discovery by Smith and Kilbourne that a biological vector in the form of the "cattle tick" was responsible for the transmission of "southern cattle fever," and that it incidentally opened the entire field of insect vectors in the spread of certain human and animal diseases.

2. The discovery by Maurice Hall that carbon tetrachloride was an efficient remedy for the elimination of hook worms in man, thus freeing millions of infected persons, many of them seriously devitalized by this parasitic infection. Before recommending the remedy Maurice Hall, like the true scientist that he was, had audaciously taken a dose of the carbon tetrachloride (known previously as a cleaning fluid) to test its generally unknown toxic properties.

3. The development by Dr. Otto Stader of a splint to effectively immobilize the fractured ends of bones. Previous to this discovery the use of plaster of Paris casts and wood splints was the universal method of handling fractures in both man and animals. The "Stader splint," now modified of course, was the basic agent that revolutionized the handling of fractures.

·VM·

Protolytic and amylolytic enzymes are the latest additives suggested to improve rations of domestic livestock.

Poultry Practice

W. R. HINSHAW, D.V.M., Ph.D.

Vaccination of Turkey Breeders Against Fowl Pox

In certain areas of the United States it has been found that turkeys kept for breeders will develop severe cases of fowl pox in late winter or early spring if not given a second vaccination six to seven months following the original one. This revaccination program is especially necessary in western, southwestern, and southern United States where the winters are mild and mosquitoes are likely to be abundant. It has been proved definitely that turkeys vaccinated against fowl pox at the usual ages of eight to ten weeks, develop a short lived immunity of six to eight months. It is for this reason that revaccination is necessary in those areas where experience has revealed that the disease is prevalent among susceptible birds during the breeding season.

It has been the experience of the writer that revaccination should not be done too soon after the original vaccination and seldom in less than six months. It is good practice to test a sample of 10 to 20% of the breeding flock after it has been selected to determine the percentage of the birds that develop typical reactions. If less than 50% of them show good takes, it is useless to revaccinate the remainder of the flock until enough additional time elapses to insure complete or nearly complete loss of immunity. If 50% or more show good takes the remainder of the flock can them be revaccinated. It is of course preferable to vaccinate before the flock starts laying if it is proved that the majority of the birds are susceptible. Egg production in the early part of the breeding season is not however markedly affected by vaccination if care is taken in handling the flock.

Fig. 1 Recommended injection site illustrated on the upper thigh.

Fig. 2 Spread of pox lesions following wing-web vaccination. Photo taken about six weeks after vaccinating. Note how the virus has spread from the site of inoculation to produce head lesions.

Turkeys should not be vaccinated in the wing-web because of the danger of undue spread to other body areas and slow healing following this method. (See fig. 2.) This spread is due to the fact that turkeys do sometimes rest with their head "under the wing," and also pick at the area when the reaction is in the active stage of viral infection.

The skin of the upper thigh has many advantages over other sites and is recommended as the best site to use. At this site there is a bare area of skin covered by a tuft of feathers which can be lifted without removing any feathers. (See fig. 1.) If the site used for the original vaccination is known it is good practice to use the opposite leg site for the second vaccination to avoid possible local skin immunity preventing a good reaction.

Vaccine made from chicken pox virus should always be used for turkeys. Vaccines of pigeon pox origin will not produce even a short lived immunity, and should never be used. Vaccines made from turkey pox virus have been tried, but discarded because of too severe reactions with no longer lived immunity than that produced with chicken pox virus.

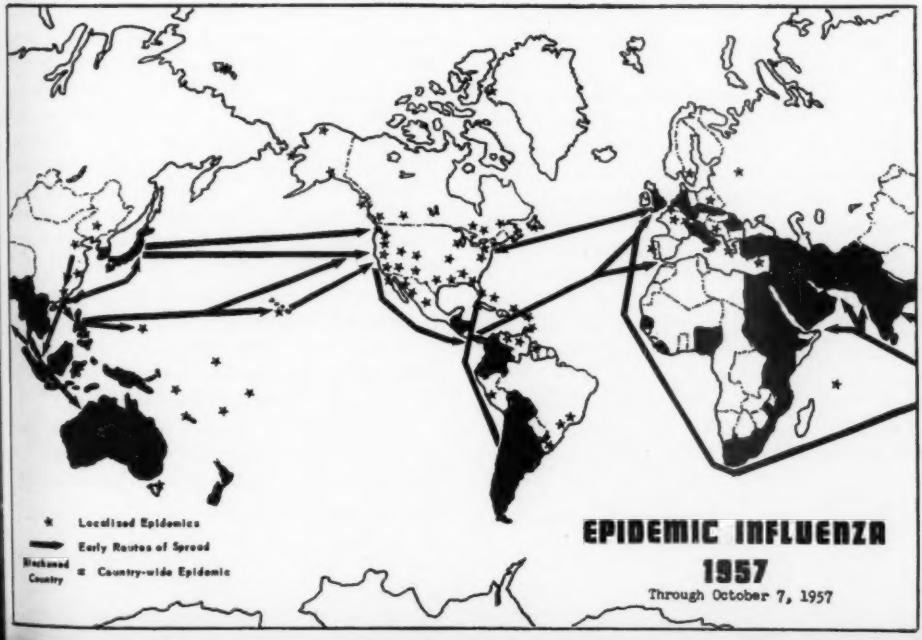
Public Health

JAMES H. STEELE, D.V.M., M.P.H.

THE U. S. Public Health Service, Communicable Disease Center, Influenza Surveillance Unit has completed a report on the international spread of Asian type influenza through the first week of October 1957. The map indicates the early route of spread.

So far as can be determined the new strain of human influenza first appeared in North China in March 1957. A report from Europe states that concurrently with the appearance of disease in man in China, an influenza type disease was seen in swine. In June 1957, a virus of the Asian influenza strain was isolated from swine lungs in China. A number of influenza experts have hypothesized that there may be a reservoir of influenza in animals. The brilliant investigations of Shope, Rockefeller Institute has revealed how swine influenza is able to maintain itself in a cycle which involves lung worms and earthworms—the virus is found in the eggs of the lung worm which are ingested by earthworms when they are excreted from swine. The infection is then returned to swine when they ingest earthworms that are infested with third stage lungworm larvae infected with swine type influenza. The virus remains latent in the animal host until they encounter some provocative stimuli such as inclement weather or a bacteria *viz. Hemophilus influenza suis.* Since Shope demonstrated the original swine strain infection, other strains have also been identified in pigs. What the epidemiologic importance of influenza in swine to man is, has not been determined, but in light of the suggested hypothesis that some animals may be a reservoir of influenza, there is certainly need for further investigation of the disease in swine and in any other animals that have contact with man.

A very interesting observation has been made by investigators that the present Asian strain may be related to the strain that caused the 1889-90 outbreak. This is based on the discovery of antibodies in aged persons born before 1888 in Holland and eastern United States. The 1889 influenza outbreak also began in Asia and spread to Europe and northern U. S. The 1889-90 influenza pandemic involved most of the civilized world, with morbidity and low mortality, and affected all age groups. The disease was clinically similar to the present Asian influenza and pneumonia was the most frequent complication. So far as can be determined there are no records of influenza in swine in 1889-90 such as occurred in 1918-19.



Though an avid photographer, Doctor Baker of Moscow, Idaho, seldom took the time to make a self portrait. He is shown here at the business end of his practice car during the early 1940's.

E. T. Baker, D.V.M.
1882-1957

With the passing of Dr. E. T. Baker, OSU '09, on October 20, 1957 at Moscow, Idaho, the turnstile of time counts off another entry in the fabulous story of the veterinary practitioner. In a real sense, Doctor Baker belongs to that select group he was once actively associated with in his work. They were the men who made the veterinary profession, men who built well, men like James Law, V. A. Moore, W. L. Williams, A. T. Kinsley, D. M. Campbell, Sesco Stewart, J. R. Mohler, A. I. Eichhorn — Adams, Bemis, Guard, Brumley, Cary, Giltner, Hall, Hoskins, Way, and a host of others.

After a Pennsylvania boyhood, Doctor Baker learned the printer's trade and became an accomplished journalist, only to give it up for a career in veterinary medicine. He came into the veterinary profession at a time when the old was giving way to the new, when medicine quacks and charlatans were making their last ditch stand. After graduation in 1909 Doctor Baker landed in Seattle to take charge of the college exhibit at the Alaska-Yukon-Pacific World's Fair. Throughout his professional career he was associated with the northwest, as a college teacher, public servant, and practitioner in the cattle and sheep country of Idaho. He entered private practice in Moscow, Idaho in 1913 and continued to practice until the end of his career.

Those were the days of no house organs, no biologic houses, no proprietory medicine, no antibiotics or vitamins, and few diagnostic laboratory facilities. The horse was considered first among the patients of the veterinarian. Advancement was chiefly by word of mouth, with confidence in the demonstrated results of dominant men. The old American Journal of Veterinary Medicine, now VETERINARY MEDICINE, was the first to close the gap that existed between individual practitioner's findings and general application throughout the profession, and Doctor Baker became one of its most prolific contributors. The printer's ink in his veins followed him through almost five decades as an active practitioner. His style faintly resembled that of Mark Twain, a hard core of serious thought rimmed in the white halo of humor. His autobiography, all 26 chapters, make entertaining, if not inspiring reading. He was also the author of books on sheep diseases and cattle management.

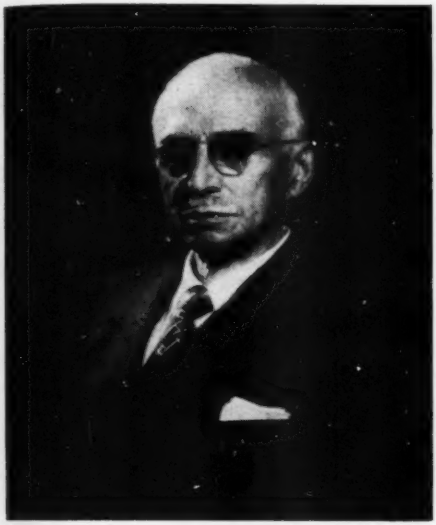
With the death of Doctor Baker, contemporaries are reminded that the old days were rugged days, and yet the profession kept its members and professionalism closely knit. Nor were the financial aspects too prominant in their considerations. The results for the patient were all that counted. Veterinary practice was an art, and the artistry rugged. Of necessity it was crude and rough at time — character was more essential than academic refinement.

The era is almost gone, and when it is completely closed, a certain crude flavor will be gone. Not that they were better days than now. They were the best that could be expected at that time.

Doctor Baker constructed well and gave the profession a solid foundation, some of the foundation that today's graduates inherit.

Former President of A.V.M.A. Victim of Heart Attack

Thomas E. Ferguson, ONT '96, died of a heart attack at his home in Lake Geneva, Wisc., October 12, 1957. He was 84 years of age.



Dr. Thomas E. Ferguson as he appeared on February 2, 1955 on the occasion of Farm and Home Week, Wisconsin University, College of Agriculture, Madison.

Doctor Ferguson was president of the American Veterinary Medical Association for the 1929-30 term, and served the association as section officer and vice president. He was also a member of the Committee on Veterinary Services for Farm Animals, and the Committee on Training Veterinarians, both with the National Research Council.

In 1955, Doctor Ferguson received recognition from his home state for outstanding service to rural life. In part the citation called him "A valued counselor to farm people and a leader in maintaining high standards for his profession."

Born in Linn, Wisc., in 1873, Doctor Ferguson attended the local schools before attending Ontario Veterinary College. He entered private practice in Lake Geneva immediately after his graduation and continued to serve that community for over 60 years. He was active in civic affairs and a credit not only to his profession, but to his community as well.

Doctor Ferguson has lectured in most of the major veterinary colleges in the United States and Canada on bovine medicine and surgery. In 1938 he was chosen one of nine men to receive the golden key of the American Veterinary Medical Association for outstanding services to the profession. In 1945, *Look* Magazine featured him in a "pictorial day in the life of an animal doctor," and in 1946 he received the XII International Veterinary Congress award in recognition of distinguished services to his profession.

He was a member of the Wisconsin State Board of Veterinary Examiners, past president of the Wisconsin Veterinary Medical Association, and member of the National Livestock Sanitary Board.

Surviving are Dr. Stanley E. Ferguson, a veterinary practitioner at Lake Geneva, Dr. W. Richard Ferguson, a physician at Baltimore, Md., and Mr. John H. Ferguson, Wood, Wisc., two daughters and eight grandchildren.

Livestock Production Forecasts

The feed Survey Committee of the American Feed Manufacturers Association forecast moderate increase in livestock production in the United States during 1957-58 feeding year.

Grains and forage crops are abundant in most of the livestock breeding and finishing area in the country and a favorable ratio between feed cost and market price of livestock are cited as responsible factors. Largest increase is forecast for hogs raised — 7% above the numbers for the previous year. More broilers also will be raised. Cattle numbers are expected to approximate those on farms and ranges in 1956-57 year.

58-1

Veterinarians Participate In International Cooperation

The International Cooperation Administration contract under which Kansas State College is furnishing technical advice and assistance to India's agricultural, animal husbandry, home economics, and veterinary science programs, has just been extended to March 22, 1959, according to pronouncement by President James A. McCain.

Under the original contract, signed in March, 1956, the Kansas school agreed to furnish nine staff members to work in the central Indian states of Andhra, Pradesh, and Bombay. The Kansas State team now is to be increased to 15 members by the addition of six veterinarians.

In addition to sending faculty members to India, young Indian scientists are brought to this country for training. Seven are enrolled for the fall semester at Kansas State College. A recent amendment to the original contract provides funds for bringing 12 more student participants to the United States for a year's study, and these are expected to enroll at Kansas for the second semester. The program also provides for the purchase of books and scientific equipment for institutions in India.

Kansas State College originally agreed to furnish technical aid until March 30, 1958, on a $732,000. contract. The trice-amended contract now runs for three years, financed with approximately $1,700,000. in ICA funds.

Purpose of the technical assistance program is to strengthen Indian agricultural institutions engaged in education, research, and extension, particularly in the fields of agriculture and veterinary science.

·VM·

Ornithosis virus has been isolated from a loft of a 1,000 pigeons in the southeast. Human disease from pigeons was originally diagnosed by health authorities in Germany. No known cases of human ornithosis (psittacosis) have been revealed in connection with this extensive outbreak.

Got your free copy? The Haver-Lockhart Veterinarians' Daily Record Book provides hour-by-hour, day-by-day record of client names, service performed, fees, payments. Also room for monthly cash accounts, record of tax deductible payments, income tax summary, postal information, handy almanac of facts, laboratory and supply record. If you haven't received your copy yet, tell your Haver-Lockhart man, or write us in Kansas City.

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58-1

Classified Advertisements

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Names of classified advertisers using V. M. key numbers can not be supplied. Address your inquiry to key number care VETERINARY MEDICINE, Suite 803, Livestock Exchange Building, Kansas City 2, Missouri, and it will be promptly forwarded to the advertiser.

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KEEP UP ON ALL DOG MATTERS: Shows, breeding, etc., thru sub'n — $3. one year., $5. two yr. to mo. mag., DOG WORLD, 3323 Michigan Blvd., Chicago 16, Ill.

INVENTORY AND PRACTICE in Central Illinois. $5,000., no real estate. Gross over $20,000. yearly last 5 years. Mixed practice. Reason for selling: leaving private practice. Address Box 394, care VETERINARY MEDICINE.

VETERINARY EQUIPMENT: Closing hospital December 1. Write for list. Address S. E. Hershey, D.V.M., P.O. Box 283, Charleston, West Virginia.

Veterinarians Wanted

VETERINARIAN: The rapid growth and increasing importance of nutritional and veterinary products in foreign fields has created a new and interesting opportunity in our International Company. We are seeking a veterinarian to be a technical service specialist in the Far East. He will coordinate research projects, assist in the preparation of literature, participate in sales training, act in an advisory capacity, and engage in periodic field missions. Applicants should have an excellent background in veterinary medicine, be willing to travel and have a good knowledge of the area. Please send complete resume including education, experience, age and salary requirements. Address Box 396, care VETERINARY MEDICINE.

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POSITION: Graduate of A.V.M.A. approved school desires position with small animal practitioner. To be released from the Army in January. Excellent references. Address Box 395, care VETERINARY MEDICINE.

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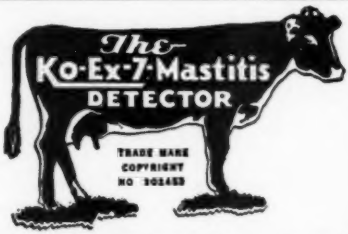

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Feed Additives Analyzed

Addressing his remarks at the University of Nebraska Feed and Nutrition Conference, Dr. S. L. Ballaun of Iowa State College urged feedmen not to include additives in their mixed feed merely to add another name on the product tag.

He said that nutritive additives, including vitamins, unidentified growth factors, minerals, and amino acids, can be justified if improvement in performance offsets the added expense. He added that addition to levels not needed or excessive did not improve diets, in fact, in some cases excess amounts of these are known to exert a depressive effect on growth, maturity, and other factors.

Nonnutritive additives are valuable only under certain specified conditions. These too may be costly and even detrimental to good animal health.

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Under-Secretary of Agriculture True D. Morse has commented recently on the fact that there has been more farm progress in the past 50 years than in all prior recorded history. "The terrific surge forward will continue," he said. "The diets of American people were never before at such a high level — and they are able to buy this excellent food with less hours of labor."

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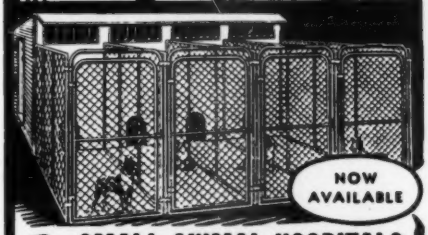

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The laboratories at Pirbright (England) have announced preparation of a new foot-and-mouth disease vaccine. The product is a live-virus vaccine which is hoped will induce a strong and durable immunity. Field tests are planned to determine its safety and potency.

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Readers Service

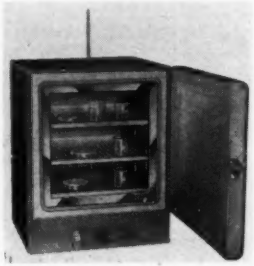
Clinical Literature on Gramicidin has been reviewed in a 20 page brochure available without charge. The brochure includes sections on gramicidin therapy in bovine mastitis, human respiratory infections, respiratory allergies, and dermatology. For copies of the brochure ask S. B. Penick & Company, 50 Church Street, New York 8, N. Y.

Pets, a booklet released as part of the now famous Assurance of a Fuller Life series, is available in quantity, without charge, to veterinarians for distribution to pet owners. Ask Mr. Howard Ennes, The Equitable Life Assurance Society of the United States, 393 Seventh Avenue, New York 1, N. Y.

Laboratory Diagnosis of Ringworm in Animals designates two film releases, Microsporum Infections, Part I, and Trichophyton Infections, Part II, now available for veterinary audiences through the Department of Health, Education, and Welfare. Both filmstrips are in color and with sound. For short term loan, address: Chief, Communicable Disease Center, Public Health Service, Department of Health, Education, and Welfare, P. O. Box 185, Chamblee, Ga. For purchase, address: United World Films, Inc., 1445 Park Avenue, New York 29, New York.

Aerosol Fleece-Marking Formulation to solve the sheep herder's identification problems at breeding time and in sorting the flock into sale lots has been developed by the Du Pont Company and the formulation is being offered free to interested packagers. Write F. R. Zumbro, 8531 Nemours Building, Wilmington, Dela.

Hot Wall Heat, giving greater uniformity under load, distinguishes all Imperial ovens, available in four models, two sizes and two temperature ranges. Ovens are suitable for



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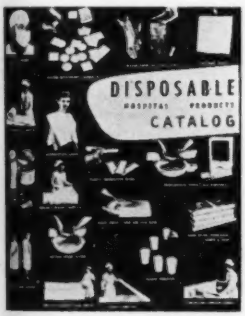
all types of drying, evaporating, processing, et cetera, and are also ideal for sterilizing. For bulletin #3500 giving full information, write Labline Inc., 3070 Grand Avenue, Chicago 22, Ill.

Torumen, a new product designed to supply nutrients to the rumen microflora and thus induce or restore rumen function, has been introduced by Armour Veterinary Laboratories. The product contains water soluble plasmolized yeast concentrate. It is a dry, free flowing, non-caking powder suitable for mixing in feed or suspended in warm water for administration by stomach tube or drench. Nutrients are required by cultures of rumen organisms, if viable, to survive and proliferate. Plasmolysis frees the active principles from the yeast cell which permits quick assimilation by the rumen microflora. Claims indicate significant increase in cellulose digestion following use of the new agent. For more information ask the Armour Veterinary Laboratories, Public Relations Department, Chicago 9, Ill.

Salt in Animal Nutrition is a new booklet giving authorative information on the use of salt not only in animal nutrition, but in livestock management as well. Articles in the booklet describe the symptoms of salt deficiency for the various classes of livestock and poultry, and give data on approved amounts and methods of salt feeding. For a free copy, write the Salt Institute, 33 North LaSalle Street, Chicago 2, Ill.

Dehorning and Wound Powder (solusponge®) is a unique new product for topical use in veterinary surgery. It possesses hemostatic, antiseptic, bacteriostatic and fungicidal qualities. For more details, ask Parlam Corporation, 340 Canal Street, New York 13, N. Y.

Parakeratosis in Pigs may be prevented by a new feed mixing salt called Sterling Swine Supermix Blusalt. The new product contains extra amounts of zinc to counteract the deficiency induced or aggravated by swine diets high in calcium and/or phosphorous. For full details, write International Salt Company, Inc., Scranton, Pa.



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Veterinary Calendar

Jan. 7- 8. **University of Pennsylvania,** 58th Annual Conference of Veterinarians. School of Veterinary Medicine, University of Pennsylvania, Dr. James Mark, program chairman.

Jan. 8-10. **New York State Veterinary College,** 50th Annual Conference for Veterinarians. Cornell University, Ithaca, N. Y., Dr. W. A. Hagan, dean.

Jan. 9-10. **Oklahoma Veterinary Medical Association,** 43rd Annual Meeting. Hotel Lawtonian, Lawton, Okla. Mrs. Larma Bennett, 2805 S. 51st St., Oklahoma City, Okla., executive secretary.

Jan. 12-14. **Kansas Veterinary Medical Association,** 54th Annual Convention. Hotel Broadview, Wichita, Kans. Dr. K. Maynard Curts, 5236 Delmar Ave., Kansas City 3, Kans., secretary.

Jan. 14-16. **Iowa Veterinary Medical Association,** Annual Meeting. Hotel Fort Des Moines, Des Moines, Iowa. Dr. F. B. Young, Waukee, Iowa, secretary.

Jan. 15-17. **Indiana Veterinary Medical Association,** Annual Meeting. Hotel Severin, Indianapolis, Ind. Dr. L. M. Borst, 3315 Shelby, Indianapolis, Ind., secretary.

Jan. 22-23. **Michigan State University,** 35th Annual Post Graduate Conference for Veterinarians. College of Veterinary Medicine, Michigan State University, East Lansing, Mich., Dr. W. W. Armistead, dean.

Jan. 27-29. **California Veterinary Medical Association,** Midwinter Conference. School of Veterinary Medicine, University of California, Davis, Calif. Dr. Charles S. Travers, California Veterinary Medical Association, 3004 16th St., San Francisco, Calif., executive secretary.

Jan. 28-29. **Louisiana State University,** Department of Veterinary Science Conference. Louisiana State University, Baton Rouge, La. Dr. W. T. Oglesby, department head.

Feb. 9-11. **Missouri Veterinary Medical Association,** Annual Meeting. Hotel Continental, Kansas City, Mo. Dr. W. L. Schondelmeyer, 116 E. Maple, Independence, Mo., convention chairman.

Feb. 10-12. **Wisconsin Veterinary Medical Association,** 42nd Annual Meeting. Pfister Hotel, Milwaukee, Wisc. Dr. B. A. Beach, 1215 Vilas Ave., Madison 5, Wisc., secretary.

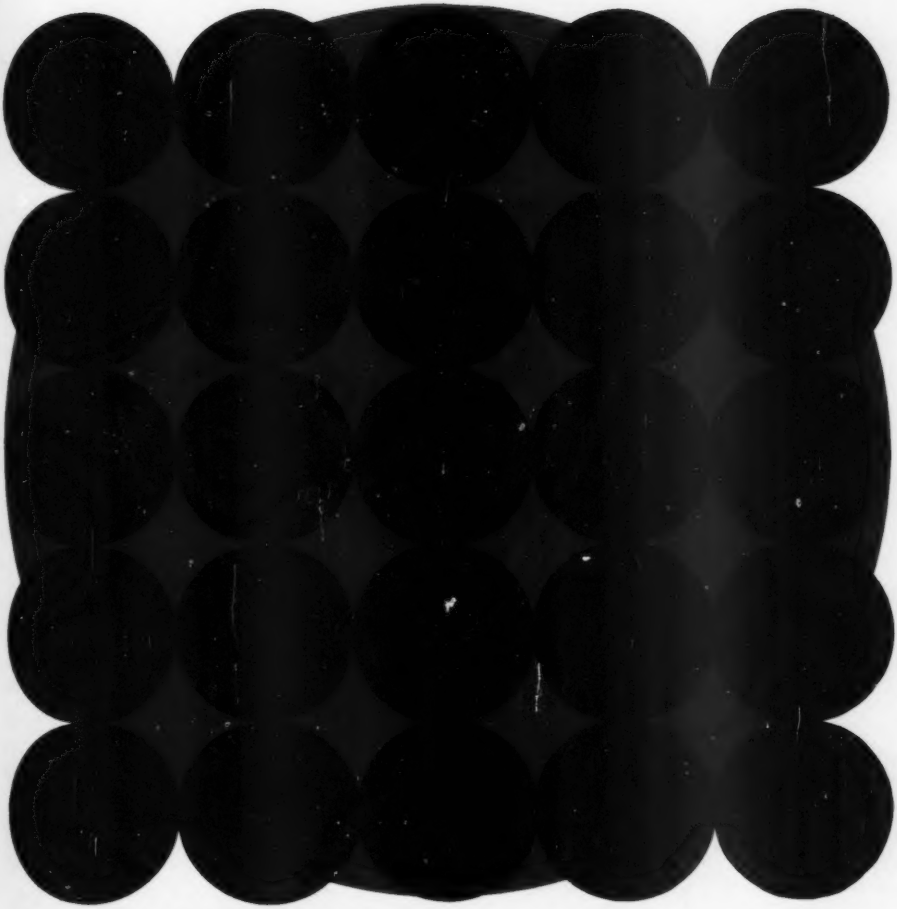
Feb. 16 **American Animal Hospital Association,** 4th Region Annual Meeting. Veterinary Clinic, Colorado State University, Fort Collins, Colo. Dr. D. T. Albrecht, chairman.

Feb. 17-19. **Colorado State University,** 19th Annual Veterinary Conference. Glover Veterinary Hospital, College of Veterinary Medicine, Colorado State University, Fort Collins, Colo. Dr. Lloyd C. Moss, Department of Medicine.

Feb. 17-19. **Illinois State Veterinary Medical Association,** 76th Annual Convention. LaSalle Hotel, Chicago, Ill. C. B. Hostetler, 1385 Whitcomb Ave., Des Plaines, Ill., executive secretary.

Mar. 16-18. **Alabama Veterinary Medical Association.** Hotel Stafford, Tuscaloosa, Alabama. Dr. M. K. Heath, secretary.

Apr. 23-26. **American Animal Hospital Association,** Annual Meeting. Drake Hotel, Chicago, Ill., Dr. Wayne H. Riser, 5335 Touhy Ave., Skokie, Ill., executive secretary.



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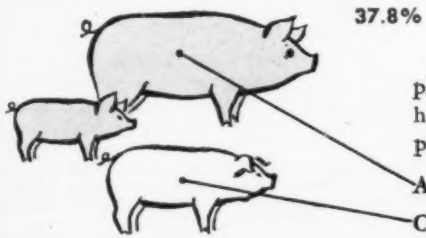
Confined rearing, multiple farrowing and other modern procedures in swine raising are responsible for a greater incidence of anemia in baby pigs. The bothersome, unhealthy, old-fashioned methods of supplying iron to combat anemia are inadequate because of the uncertainty of effective assimilation.

The five-year search for an injectable iron solution was successful with the introduction of Armidexan. Armour's iron dextran complex was introduced over a year ago. Armidexan has been administered to over one million pigs and has produced remarkable results.



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A university test lot of Armidexan treated pigs were heavier, showed better bloom and had more vigor than the control group. Compare these weight results:

Armidexan pigs	30 days	Average 15.3 lbs.
Controls	30 days	Average 11.1 lbs.

Armidexan's effectiveness in preventing anemia has been thoroughly proved. Radio-tracer studies show that 88% of the Armidexan injected reaches the blood within 36 hours. With oral iron, less than 15% ever reaches the blood forming centers.

Armidexan is safe in recommended doses, even in day-old baby pigs. No abscesses, tissue damage, or lameness will result when it is used as directed.

By injecting 2 cc of Armidexan within the first three days after birth, a number of related benefits have been demonstrated:

Scours due to hypochromic anemia are avoided . . . Resistance to pneumonia and other infectious diseases is increased . . . Iron-rich pigs are not as subject to rhinitis, T.G.E., and "bull nose".

Tests show that Armidexan saves more baby pigs than oral iron methods.

Finally, appetite is improved, growth is accelerated, and better bloom is achieved. Pigs reach marketing weight about two weeks sooner than those receiving no extra iron, with resulting feed savings.

Substantiating data is available to the veterinarian for the asking.

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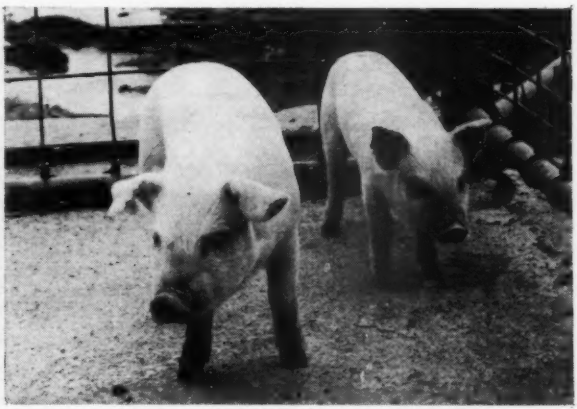
LIVING EVIDENCE THAT ARMIDEXAN MAKES A DIFFERENCE!

These two pigs are litter mates. The larger one received 2 cc of Armidexan on the third day of life. The smaller one was not treated.



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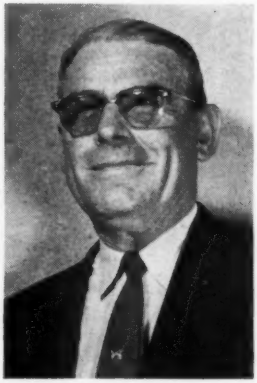
Dr. John Paul Delaplane

1906-1957

Dr. John Paul Delaplane, OSU '29, professor and head of the department of veterinary microbiology, Texas A. & M., died September 22, 1957 at College Station, Texas.

To veterinarians and to the poultry and livestock industry, Doctor Delaplane was the personification of scientific research in disease control.



John Paul Delaphane, D.V.M.

Doctor Delaplane was the author of numerous scientific publications, and was a nationally recognized figure in research on virus diseases of poultry. He was particularly well known in Texas for his recognition, isolation, and control of the agent causing ornithosis in turkeys. He also made outstanding contributions on coccidiosis, enterohepatitis, chronic respiratory disease and other respiratory infections in poultry. At the time of his death he was attempting to develop an effective vaccine for pink eye in cattle.

Doctor Delaplane was a native of Greenville, Ohio. He received his D.V.M. degree in 1929, and his M.S. in 1931 from Ohio State University. He was engaged in research and teaching at Rhode Island State College until 1942 at which time he joined the staff of the Texas Agricultural Experiment Station. He returned to Rhode Island in 1946 as professor and head of the department of animal pathology. In 1951 he was

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appointed professor and head of the department of veterinary microbiology at Texas A. & M. College.

A number of Doctor Delaplane's devoted friends have established the John Paul Delaplane Memorial Fund. The fund will be held in trust by the A. & M. College of Texas and administered so that all of its income will be used to provide awards to students in recognition of research contributions in the field of poultry and animal diseases.

Those so assisted will undoubtedly continue to be interested in and contribute to basic research problems in the field of animal and poultry diseases, thus projecting through the years one of the many deep interests of this man. Others are invited to use this means of honoring Doctor Delaplane and of perpetuating his influence and work. Contributions should be made payable to the John Paul Delaplane Memorial Fund and mailed directly to the Texas A. & M. College Development Fund, College Station, Texas. Such contributions are deductible on personal and corporate income tax returns.

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·VM·

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*Thom, K. L., *Fasciola hepatica* als Ursache einer Endometritis des Rindes. *Deutsche Tierarz. Wochensch.*, 63(37/38):389, 1956.

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Deaths of Veterinarian

WARREN J. EMBREE, CVC '10, 69, retired chief ve... inarian of the Webster Weighing and Inspection B... reau, New York Central Railroad; respected figure ... livestock conservation circles; at Columbus, O... August 1957.

WADE W. GARVERICK, OSU '42, 44, former secretary ... first honorary president of the Indiana State Ve... nary Association; veteran of service with the Ar... Veterinary Corps, WWII; at Zionsville, Ind., Au... 8, 1957.

THOMAS W. GIDLEY, MCK '03, 75, Malvern, Iowa, p... president of the Iowa Veterinary Medical Associati... past president of the Southwest Iowa Veterinary M... cal Association, and member of the Missouri Va... Veterinary Association; of a heart attack, Cou... Bluffs Hospital, Council Bluffs, Iowa.

E. T. HALLMAN, API, '10, 73, East Lansing, Michi... banker, retired head, department of animal patho... at Michigan State University, past president of ... Michigan State Veterinary Medical Association ... first chairman of the research council, A.V.M.A.; m... ber of Phi Kappa Phi, Sigma Xi, and Alpha Psi ho... societies; member of Lansing Rotary club for 14 ye... at East Lansing, Mich., November 18, 1957.

ARTHUR M. HAUSHALTER, WES '05, 73, member of the W... consin and Southeastern Wisconsin Veterinary Me... Associations, at Menomonee Falls, Wisc., May 31, 19...

EARL A. HAYS, STJ '18, 63, practitioner at Fort Do... Iowa, of a heart attack at the family's summer ho... Lake Okoboji, Iowa, August 12, 1957.

FRANK P. MATHEWS, COL '23, veteran of WWI, at A... royo Grande, Calif., August 1, 1957.

DERMOD McARDLE, CVC '20, 67, member of California ... Bay Counties Veterinary Medical Associations, at S... Francisco, California, July 1957.

FRANK A. MOORE, IND '11, 80, retired practitioner, ... Gaston, Ind., after an extended illness, June 2, 1957.

B. O. MOORE, ONT '15, 64, of a heart attack at Be... County Hospital, Harrison, Ark., September 1, 1957.

FRANK H. RIESTER, IND '01, 79, retired practitione... former president and secretary-treasurer of the K... tucky Veterinary Medical Association; and first p... titioner to conduct saliva tests in Kentucky Thoro... bred race horses; at Bueshel, Ky., August 19, 1957.

JOHN SAPRAUSK, LAT '30, 53, graduate of the Univer... of Latvia, and general practitioner in that co... until 1936; chief veterinarian of the district of R... Latvia from 1937 to 1944; (he received his D.V.M. ... gree in Hanover and settled in the United States at ... end of WWII); of a heart attack at Pomona, Cal... July 29, 1957.

THOMAS A. SIGLER, retired practitioner at Greenca... Ind., June 24, 1957.

JACK K. SKILES, KCV '16, 66, well known practitio... dairyman, cattleman and farmer in Denton Co... Texas; organizer of the Denton County Fair and ... president and manager for nearly 30 years; past p... dent of Kiwanis; member of Masonic Lodge, Shri... and Moslah Temple, Fort Worth; captain in the A... in WWI; at Denton, Tex., following a two year ill... September 4, 1957.

GEORGE L. SIMON, CVC '94, small animal practitioner, ... Marion, Indiana recently.

CLIFFORD J. SPARKS, CVC '07, general practitioner, ... Sully, Iowa recently.

LEWIS SPOLUM, ISC '30, general practitioner, at Ol... Minn., April 14, 1957.

GEORGE W. STAGGS, WSC '20, 64, retired practitioner ... former owner of the Tacoma Veterinary Hospital; ... master of the Chehalis Kiwanis club, former pre... of the Washington State Veterinary Medical As... tion; member of the Adna Grange; Elks Lodge, ... Puget Sound Medical Association; at Tacoma, W... of a heart attack, August 18, 1957.

FRED J. STANDFORD, MCK '08, 81, first state veterin... in Arkansas, charter member of the Arkansas Ve... nary Medical Association; member of the Royal ... Masons and Eastern Star; operator of the Ark... Veterinary College from 1912 to 1922; at Fayet... Ark., after a lingering illness, September 8, 1957.

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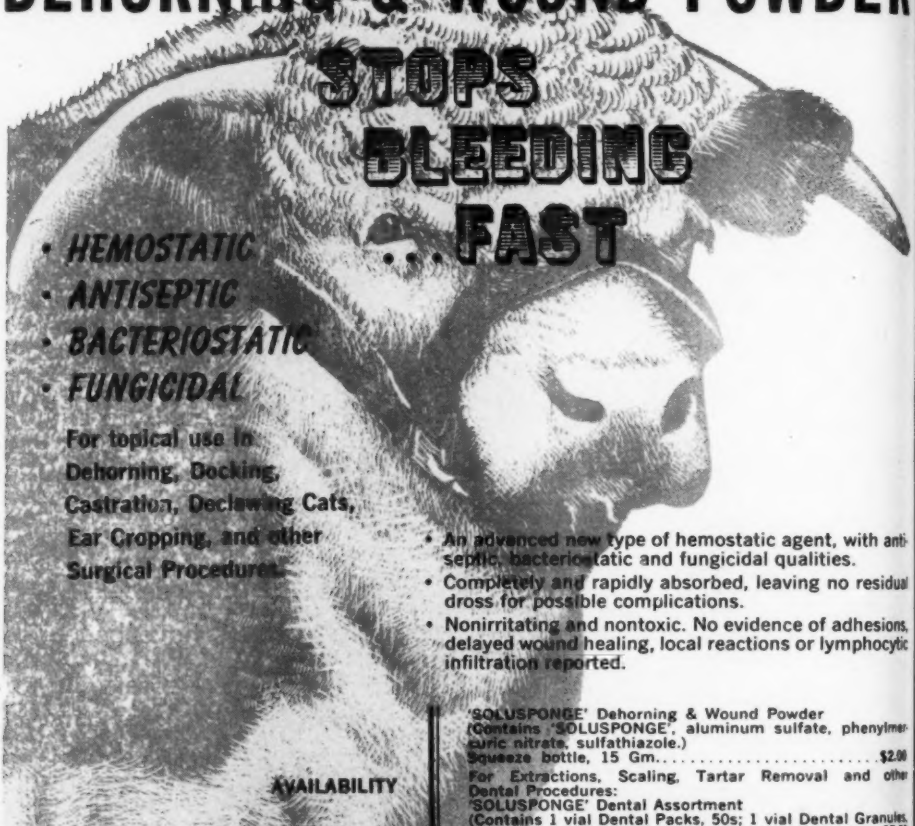

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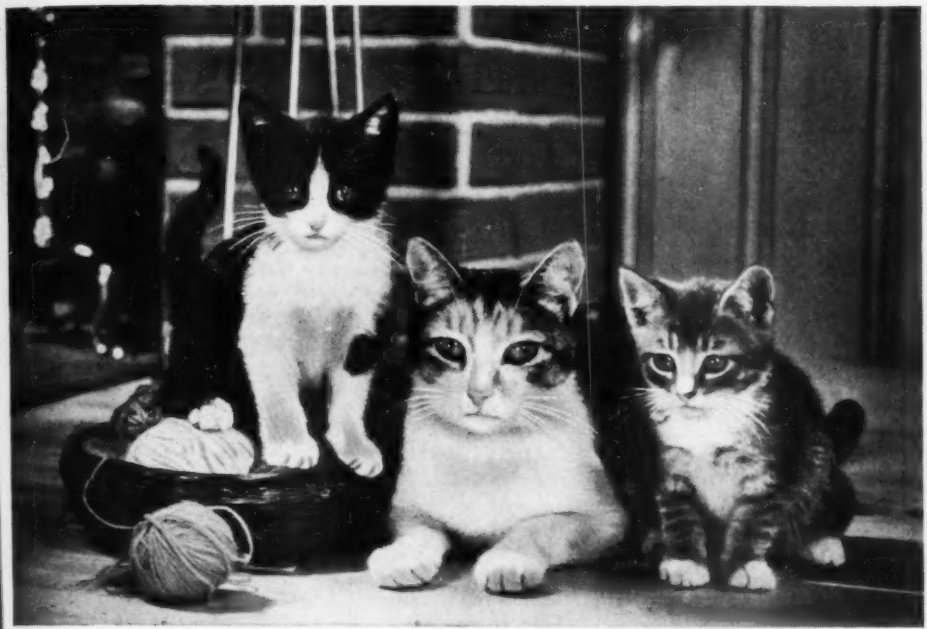

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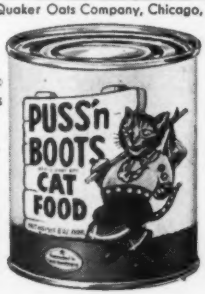

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*Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

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REFERENCES: 1. Bull, W. S.: N. Amer. Vet., In press. 2. Henry, R. T., and Blackburn, E. G.: Vet. Med., in press.

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The proposal that penicillin for treatment of mastitis be restricted for use or on prescription by veterinarians has been turned down by the Food and Drug Administration according to an article appearing in *Hoard's Dairyman* (Aug. 10, 1957). Reason given is that by restricting such drugs "possible hardships" to dairymen and farmers would develop because of increased cost of the agents and inaccessibility in some locations.

This ruling fails to consider the seriousness of sensitizing levels of penicillin in market milk. There is hardly question but that at this time great pressure will be exerted to prevent professional control of this potent medicinal product, though many precedents exist to prove the rationale in favor of professional use (by or on prescription of a veteerinarian) of mastitis treatment agents. The end results should guide the thinking of officials in this regard. Present and potential hazards to all persons drinking milk have been confirmed. Some degree of drastic measures alone is likely to accomplish desirable end results.

It is also denied that restricting therapeutic formulations for treatment of mastitis in dairy cows to professional use would damage an acceptable standard of cost or accessibility. It would, however, limit promiscious use and assure milk for young America that is not adulterated.

·VM·

A year-long study on the effect of furazolidone (furoxone—Eaton) on growth and reproductive activity of male turkeys is reported in *Poultry Science* for March 1957.

A total of 234 male birds were divided into three groups and fed furoxone at a 0.011% level in the feed. Females served as controls. Treatment included addition of the medicament throughout the study, fed up to ten weeks of age, and often ten weeks of age to the end of the study.

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